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IRON TRADE REVIEW

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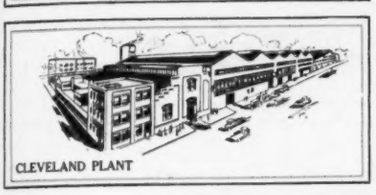
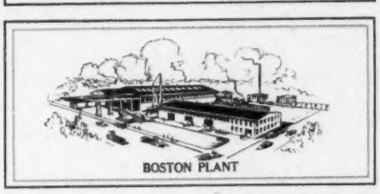
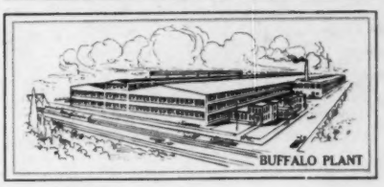
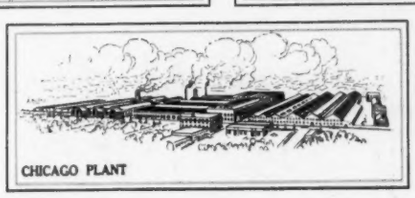
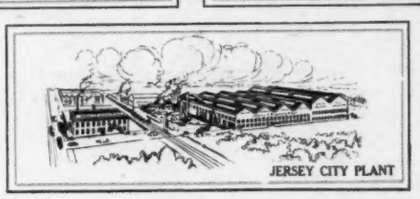
CLEVELAND, O., MAY 17, 1928











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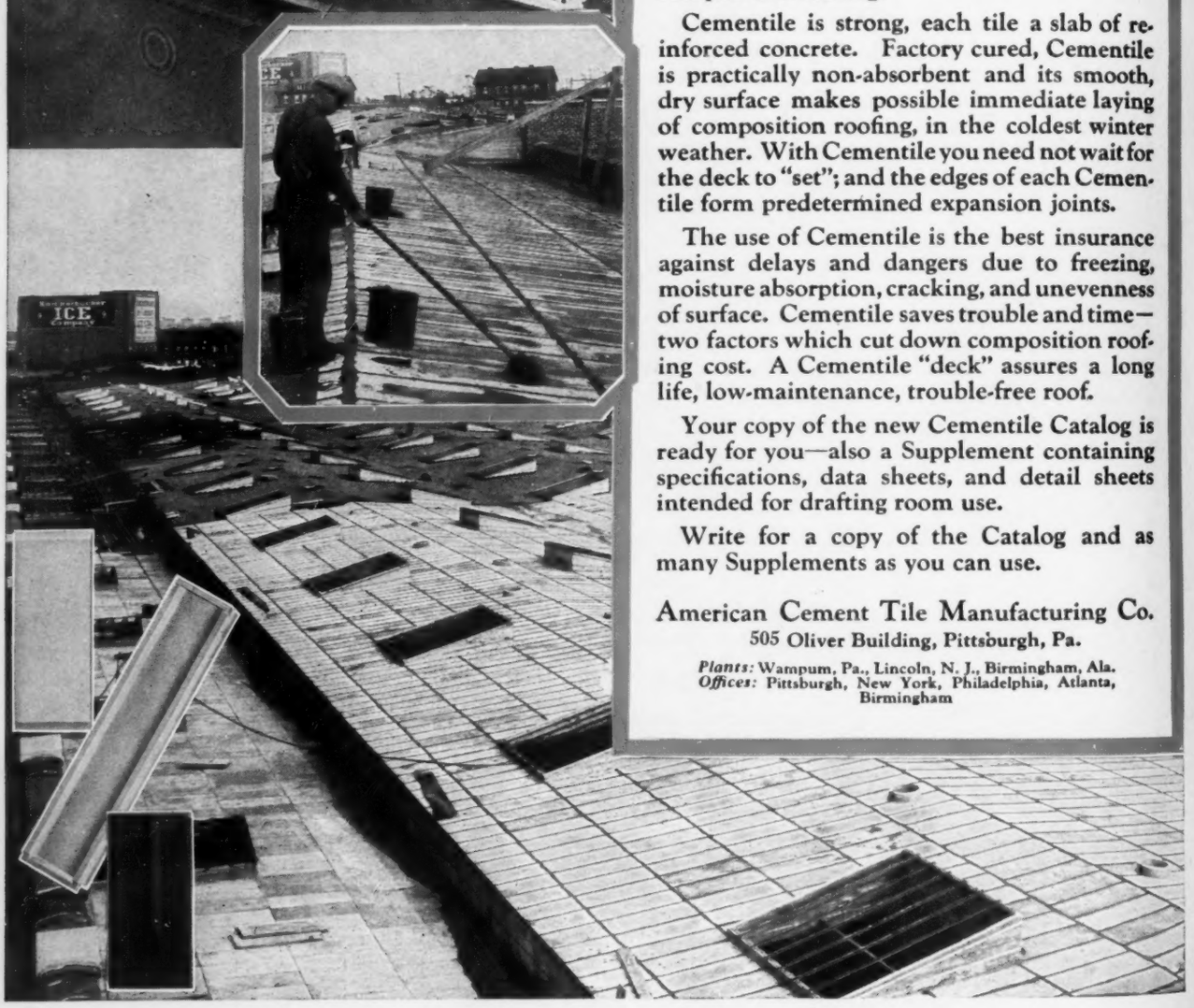

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Volume 82
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IRON TRADE REVIEW
Established 1883

Cleveland, O.
May 17, 1928

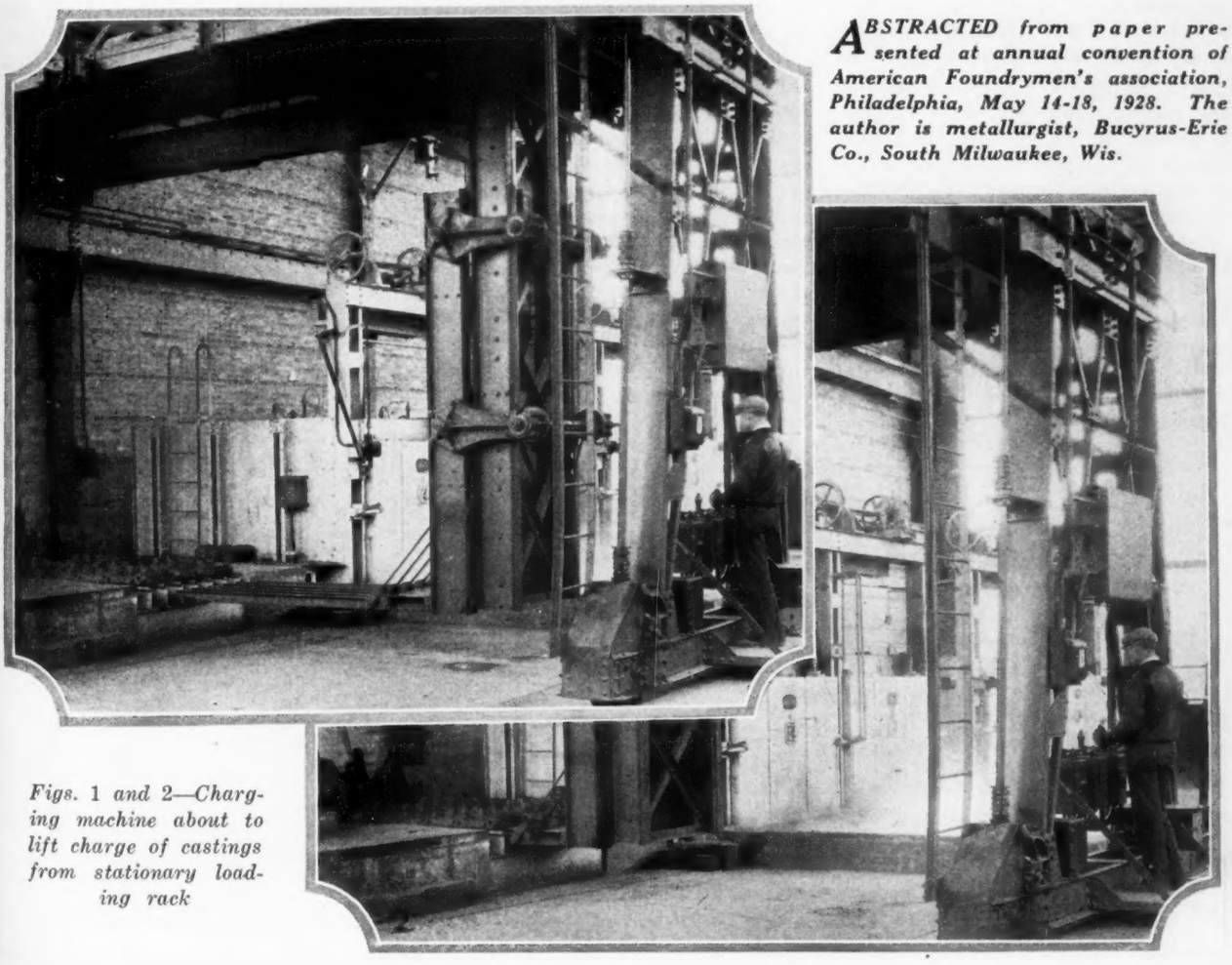
How a Milwaukee Plant Heat Treats Miscellaneous Steel Castings

One-third of Foundry's Output Is Quenched and Tempered in Electrically Heated Furnaces Having Novel Charging Devices

By A. W. Lorenz

EXPERIENCE of the Bucyrus-Erie Co. with heat treated steel castings extends over a period of 18 years. At present approximately one third of the entire output is quenched and tempered as differentiated from the ordinary annealing process to which all castings are subjected before they leave the foundry. To handle the special work properly, plans were prepared in 1926 for a new building which should represent the most modern development in efficiency of operation and ability to produce high grade steel. The first unit of this new department with a monthly capacity of 500 tons was completed in September, 1927. Eventually the building will be

ABSTRACTED from paper presented at annual convention of American Foundrymen's association, Philadelphia, May 14-18, 1928. The author is metallurgist, Bucyrus-Erie Co., South Milwaukee, Wis.



Figs. 1 and 2—Charging machine about to lift charge of castings from stationary loading rack

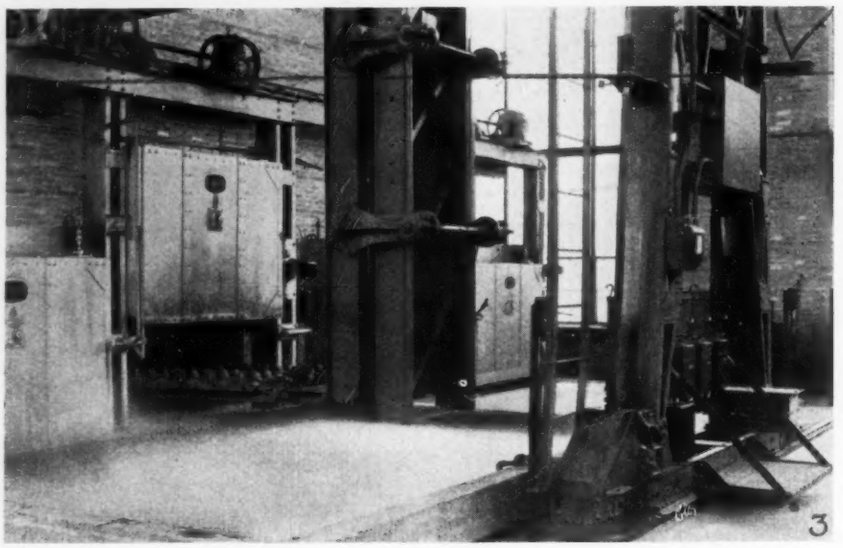


Fig. 3

HERE the charge is on the prongs of the specially-designed charging machine and is being pushed into the quenching furnace shown at the left, where it will rest on rails.

expanded and equipped to handle from 1000 to 1500 tons of steel castings per month. Several distinctly novel features have been introduced in the method for handling the castings in the process of manufacture.

The building 65 x 80 feet, of brick and steel sash construction with concrete floor, extremely well lighted and ventilated, offers sharp contrast to the old idea that heat-treating shops should be clothed in darkness.

A good broom constitutes part of the regular equipment, and the floor is cleaned at regular intervals. The cleanliness of the shop, even in periods of maximum production, has attracted comment from all who enter the plant. These conditions stimulate and encourage careful workmanship.

Adjacent to the main building is a side bay, 35 feet wide, in which the substation is housed. This substation furnishes power also to an electric melting furnace in the steel foundry, and for general purposes.

Directly in line with the heat-treating department, and 160 feet distant, is a building at present used for foundry purposes, 120 feet long. Design and construction of these two buildings are identical, so that with the intervening space already noted, provision is made for practically unlimited expansion.

Furnaces and Equipment

The heating equipment is unusually simple, consisting of four box-type electric furnaces with hearths 5 x 6½ feet, and one single-chamber car-type electric furnace, with car 3 x 14 feet. With a large-scale production in mind, first leaning naturally was toward some type of automatic or semiautomatic continuous furnace, but while such furnaces may be of advantage on selected or special work, none could be found which would handle all types and sizes with equal facility. With castings ranging from 5 to 2000 pounds in weight, the difficulty of automatic or continuous operation will be appreciated. Decision finally narrowed down to simple box and car-type furnaces, because of their flexibility.

While the choice of electricity was largely dictated by an extremely low power rate in the Milwaukee district, it should also be noted that this type of heat presents several distinct advantages which peculiarly adapt it to heat-treating operations:

(1) Extreme uniformity of heat application.

(2) Extreme closeness of temperature control.

(3) Impossibility of unduly forcing a heat.

All these factors are important in securing a uniformly high-grade product. Regulation, of course, is entirely automatic, by a well known type of pyrometer-controller sensitive to 5 degrees plus or minus. The box furnaces are of the twin-chamber type. Heating elements are nichrome ribbon,

Fig. 4

AFTER the charge has been heated in the quenching furnace, it is removed on the forks of the charging machine. Here it is shown as it leaves the furnace chamber, preparatory to being plunged into the quenching bath.

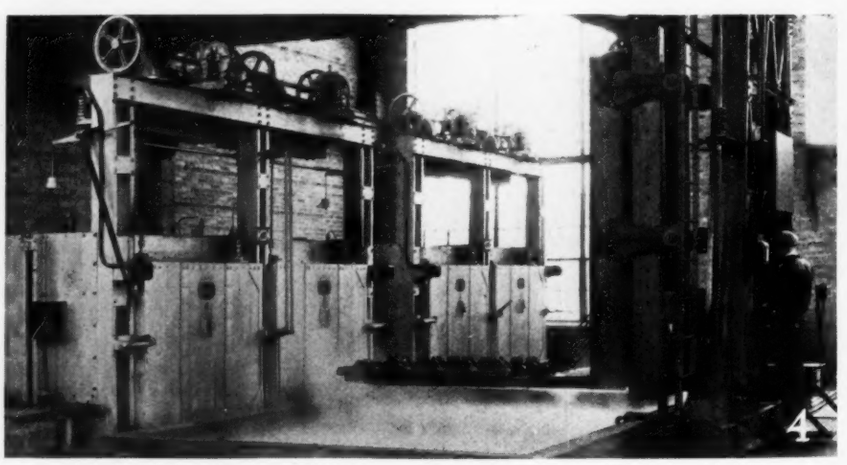
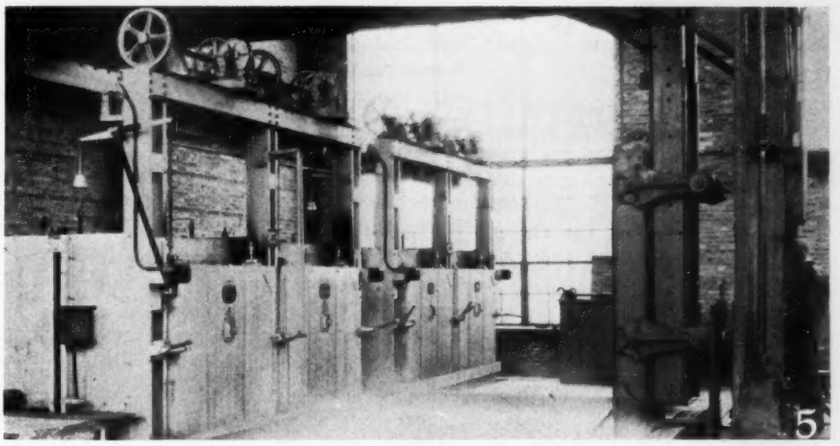


Fig. 5

THE forks are lowered, submerging the charge in the quenching tank. The advantage of having the tank immediately in front of the furnace is evident from the fact the transfer of charge from furnace to tank consumes from 5 to 10 seconds.



located under the hearth and on the roof. The hearth itself is formed of alloy castings, in the shape of an inverted T, providing not merely a hearth, but also a series of rails, 8 inches high on 8-inch centers.

The car-type furnace is of conventional design, with heating elements on the side walls only. Bottom heat was considered unnecessary on this narrow furnace.

The shop is served by one 5-ton traveling crane, one gasoline tructractor, and one charging machine of special design. Method of charging the box furnaces by this charging machine constitutes the most unique feature of the installation.

Figs. 1 to 6, show that the machine is essentially a one-leg gantry or traveling crane, equipped with a set of six horizontal prongs suspended from an overhead trolley in such a manner that the prongs may be moved up or down, in or out, at the will of the operator. The whole machine travels up and down the shop on suitable rails set in the floor and on the brick side wall of the building.

An elevated platform extends along the side of the building, in alignment with the four box furnaces. This platform is used for loading and discharging materials in and out of the furnaces. The platform is 20 inches high, permitting material to be unloaded from trucks or trays with a minimum of effort.

Loading Racks

Set in this platform are two loading racks, exact counterparts of the furnace hearths, a set of rails, 8 inches high, spaced on 8-inch centers. The top of each rack is flush with the surface of the platform.

A quenching tank, 5x12x17 feet, with a working capacity of 6500 gallons sits immediately in front of the quenching furnaces. This tank is filled with water, maintained at a temperature of 125 to 150 degrees Fahr. through steam and cold water inlets. It is also connected through a circulating system with a cooling tower on the outside of the building.

Material is delivered by truck or by crane to the loading platform, where two helpers arrange the pieces upon one of the loading racks. Pieces over 16 inches in widest dimension, and some pieces as small as 8 inches, rest on the rails without further support. Smaller castings are placed upon perforated trays. The fork of the charging machine then is moved forward and inserted between the rails of the loading rack, beneath the charge.

The entire carriage then is raised, thereby lifting the whole charge off the loading rack. The charge is transferred to one of the quenching furnaces, where by a reversal of the previous operations, it is deposited on the furnace rails. The charges usually range from 1000 to 4000 pounds in weight, and the transfer is effected in from 30 seconds to one minute. Quenching is performed in like manner, but since the quenching tank is directly in front of the furnaces, the heated charge is transferred from the furnace to the tank in from 5 to 10

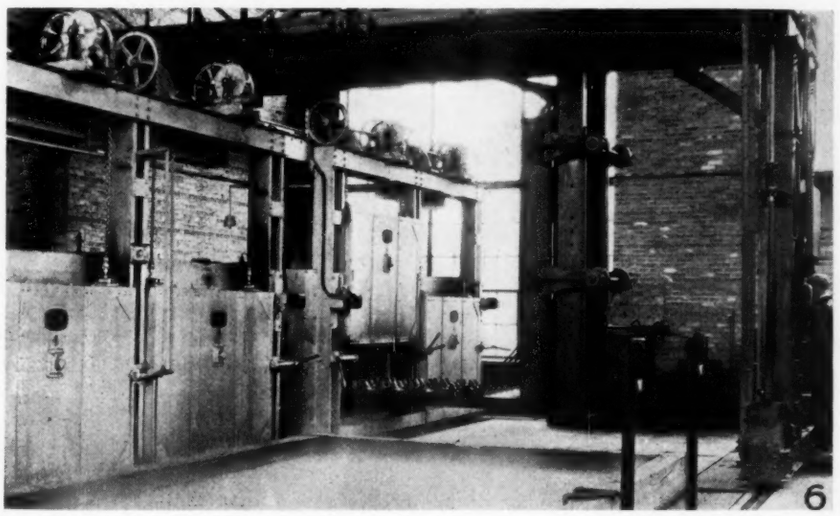


Fig. 6

AFTER the work is removed from the quenching bath it is charged into one of the draw furnaces. The contral stations for operating the furnace doors are shown in the right foreground. The tempering operation adds much to the properties of the castings.

seconds. After the quench, the charge (still supported on the charging fork) is transferred to a second furnace for tempering.

The entire cycle, including the opening of the doors, is handled by one man on the platform of the charging machine. The furnace doors are controlled by push buttons set on posts within convenient reach of the charging machine operator. Limiting devices, stops, and indicators, permit perfect alignment of forks before opening the doors, protecting the furnaces from damage, and speeding up the transfer with minimum loss of heat.

Notwithstanding the economy of this arrangement, it has been obtained without the least sacrifice in quality of the product. In fact, the method has several advantages. Pieces never are piled promiscuously, but are neatly and uniformly placed, always in the same position. The quenching is not a mere dumping proposition. Each piece is fully exposed on all sides to the quenching medium. The whole scheme promotes a uniformity in heating and quenching seldom obtained in heavy pieces, except with automatic quenching devices.

With the general trend of steel foundries, so far as electric annealers are concerned, toward twin or even three-chamber types, it may be interesting to observe that in the present installation, the car-bottom furnace consists of only one chamber and one car. Such an installation is not adapted for furnace-cooling treatments. It is intended entirely for the heating of special air-hardening steels, also for shafts and similar pieces for quenching.

It is well established that furnace or slow cooling is decidely inferior to air-cooling for development of maximum strength, and it was not considered the function of this plan to equip for such a treatment. Nevertheless, the method of operating this furnace tends to produce normalized or quenched and tempered castings at a cost not appreciably greater than that of simple annealing in twin chamber car-type furnaces.

For handling work on cars, a carefully balanced lifter is used which again employs the prong idea, and is suspended from the overhead traveling crane. A rack made up of 12-inch *I*-beams also may be observed, supporting a suitable furnace charge. The beams are placed on 18-inch centers, similar to the spacing of rails on the furnace car. With this apparently unwieldy, but really quite simple device, a car may be unloaded, reloaded, and shoved back in the furnace, in 5 minutes, thus increasing efficiency not merely by continuous utilization of the heating chamber, but also by reclaiming a large portion of the heat stored up within the car itself. With twin car types, nearly all the heat absorbed by the car is lost. Naturally, also a saving is effected in maintenance and depreciation costs with the simpler equipment.

Removal of the heated parts to a separate rack for cooling is distinctly beneficial where air-cooling is desired, since the cooling rate is considerably more rapid and uniform than could be obtained on a hot car. The racks entirely open underneath, permit free access of air. Maximum hardening conditions are further promoted by light loads, carefully arranged for rapid cooling.

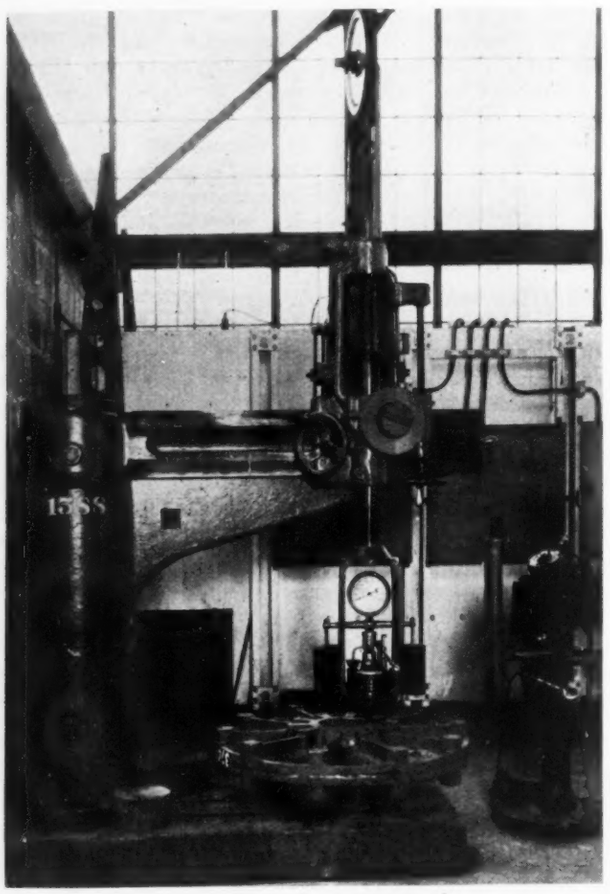


Fig. 7

IN ORDER to facilitate the testing of heavy castings for hardness, a brinell head was mounted on the arm of an old radial drilling machine.

Hot Water from Cupola Is Used for Washrooms

One of the interesting innovations in the mechanical equipment of the new stove foundry of the Peninsular Stove Co., Detroit, which was described in recent issues of IRON TRADE REVIEW, is a device for utilizing some of the waste heat in the cupola to circulate hot water in the employe's washrooms. The hot water line also is connected with the feed water line leading to the boilers which supply hot water to the radiators which heat the building. It is claimed a substantial saving in the coal bill is effected in this manner.

The idea is based on the familiar water back placed in kitchen stoves for heating the family water supply in a galvanized or copper tank mounted close to the stove. In this instance a glorified water back is built into the lining of the cupola about 2 feet below the charging door and piped in the usual manner to a supply and outlet. The heat in this section of the cupola is sufficient to raise the water to a high temperature, but not intense enough to affect the iron in the waterback casting.

Want 24-foot Channel

Great Lakes shipping interests believe lake ship channels should be deepened to 24 feet instead of the 23 feet recommended by Maj. Gen. Edgar Jadwin, chief of army engineers, according to Col. L. C. Sabin, Cleveland, vice president of the Lake Carriers' association. Variations in depths are so rapid, said Colonel Sabin, that to insure a 23-foot channel a leeway of 1 foot is necessary.

Alloy Steel Castings Meet Demands of Engineering Development

Characteristics of Three Groups of Alloy Castings Fulfill Varied Special Requirements—Care in Manufacture Is Important Consideration

By J. W. Frank

ALLOY steel castings represent the answer to the demands of engineers and manufacturers for steels of improved quality and strength. By the proper application of alloying elements to steel, it is possible to obtain increased physical properties such as tensile strength, elastic limit, reduction of area, resistance to impact, resistance to abrasion and resistance to oxidation, that could not be obtained from the best of carbon steel castings.

Each of the alloy steels has its own definite characteristics. Due to the increased service, these steels are able to demand a higher price than is asked for ordinary steel castings. By their use, machinery that has multiplied its work power to many times its limit previously set, has been developed.

There are three distinct classes of alloy steels, and their lines of demarcation are clearly marked. First are the steels of high physical properties, such as tensile strength, ductility, resistance to impact, abrasion, distortion and fatigue. The second class includes steels with extraordinary properties, such as resistance to corrosion and magnetic permeability. The third deals with heat resisting alloys. While these are not in the strict sense of the word alloy steels, their growing application in the make-up of heat treating appliances grants them a place and consideration in this article.

The first of the alloy steels, both in conception and in application, were the manganese steels. Until recently those having from 1 to 1½ per cent manganese were not classified as alloy steels. Manganese steel of this analysis, when properly heat treated, has excellent tensile strength and ductility, with good resistance to abrasion. It has been extensively used for caterpillar shoes, truck wheels, and in fact, anything requiring higher physical properties at a minimum of expense.

Manganese steel of 12 to 14 per cent content is known universally and has its application clearly defined. It stands alone in respect to hardness and resistance to impact wear. Due to its extreme hardness, it is machined with difficulty, and usually is ground to shape. Where machining cannot be eliminated, soft steel inserts generally are used, being either pressed or cast into the larger castings. Manganese steel also undergoes a plastic flow or deformation, therefore its use is not recommended where wear is due to abrasion. Castings for ball mills, pulverizing machinery and rock crusher jaws illustrate the uses of this high manganese steel.

Alloy steels containing nickel or molybdenum, with manganese somewhat higher than normal, deserve to have a wider acquaintance among manufacturers of steel castings.

Nickel-manganese steel usually contains nickel in the neighborhood of 1 per cent, with 1 to 1½ per cent manganese. The usual carbon range is 0.30 to 0.40 per cent. The use of the nickel obviously adds to its cost, but the increase in ductility and toughness, amply justifies it. This metal also has a higher brinell hardness than the straight manganese steel of low content, under similar heat treatments. It is cast into substantially the same class of work as the 1 to 1½ per cent manganese steel.

In the manganese-molybdenum steels, the manganese is kept within the same limits, with molybdenum 0.20 to 0.40 per cent. The results, as a whole, are the same as with nickel-manganese steel, except that the elastic ratio of the manganese-molybdenum steel is somewhat higher.

Nickel steels are the best known and the oldest of all commercial alloy steels. They were developed primarily for use in armor plate and ordnance, but since the war their peacetime usage has been increased enormously. The nickel range is from ½ to 5 per cent, with carbon 0.10 to 0.60 per cent. Its characteristics are a high tensile strength and elastic limit, with good ductility, fine grained structure, and usually, freedom from blow holes and porosity. These steels are used where extreme toughness is the outstanding requirement. The lower carbon members of this series are invaluable for parts that are to be case hardened. Their use results in a tough core, with a hard case, which is the ideal condition. Bridge castings, rail clamps and car replacers are a few of the numerous uses to which straight nickel steel can be utilized in present day commercial applications.

The nickel-chrome series embraces a large and comprehensive list. These alloys are well known and the most widely used of all the alloy steels now on the market. Nickel and chrominum complement each other and form ideal combination, having unusually high strength, good ductility, and a remarkable resistance to fatigue and abrasive wear. The analysis ranges from ½ to 3½ per cent nickel and from 0.45 to 1.75 chrome, with carbon from 0.10 to 0.60 per cent. The ideal condition is where the ratio of the nickel to the chrome is in the vicinity of 2 or 2½ to 1. As is true with straight nickel steels, the members of this series having low carbon contents, find application in castings that are subsequently carburized, and are more or less interchangeable with them, but giving a somewhat heavier and harder case.

Alloy Castings Rapidly Gaining Favor

IN VIEW of the increasing production of alloy steel castings, the accompanying discussion of their characteristics is timely. It is abstracted from a paper presented at the thirty-second annual convention of the American Foundrymen's association, Philadelphia, May 14-18, 1928. *The author is chief metallurgist, Chicago Steel Foundry Co., Chicago.*

The medium carbon steels have the widest application and the greatest possibilities. Where abrasive wear is encountered, they are supreme. They are used extensively for caterpillar shoes, chain belt, mill rolls, excavating bucket lips and teeth, oil well machinery, hoisting drums, brake drums, special trackwork, lightweight car wheels, in fact for anything where wear is due to abrasion and not to impact. Brinell hardness is valueless as an index to this resistance, but actual service tests have proven, time and time again that, in this respect these steels are superior to others that are much harder. Evidently brinell hardness has no connection whatever with abrasive resistance. Toughness can be obtained by increasing the alloy content and allowing the carbon to drop to about 0.30 per cent. This metal is very useful for high pressure valves and fittings and for railroad knuckles.

The high nickel-chrome steels, strictly speaking, should not be classified as alloy steels, being really ferrous alloys. The iron is seldom over 60 per cent and may be as low as 20 per cent. This is really an academic distinction, however, and many steel foundries are making castings of this material at present. The ranges of the alloying elements are extremely wide, nickel varying from 20 to 65 per cent, chrome from 7½ per cent to as high as 40 per cent. The silicon may be either normal or anything up to 5 per cent.

If properly made the heat resisting steels are tough, somewhat difficult to machine, and show excellent tensile strengths from room temperature to about 1750 degrees Fahr. There is a gradual loss in strength, but it is not by any means as rapid as is the case with other metals. The feature of these alloys, as their name would indicate, is their remarkable resistance to oxidation. Failures are seldom due to oxidation as often they show no trace of scale after almost indefinite length of service. If care is taken in not overloading them and in not heating or cooling them too rapidly their life will be greatly prolonged. The resistance to oxidation are cast into annealing pots, carburizing boxes, lead pots, branding irons, oil burners, and heat treating furnace parts, such as linings, chain belts, racks, and similar parts for furnaces used in vitreous enameling. A rather high price differential is paid for such castings, but they prove very economical when heat hours are taken into consideration. In this field especially, intensive advertising is carried on, and without exception, all alloys are marketed under trade names.

Straight chrome steels of low content have been cast but their use is uncommon. Chromium, by itself, gives more hardness than carbon, and at the expense of less ductility. The chromium is usually from 0.60 to 1.50 per cent with carbon usually from 0.15 to over 1.00. These steels, especially those containing the more carbon, are used where rigidity and freedom from distortion are the predominating requirements.

Imparts Stainless Quality

The high chrome steels are the stainless steels and irons. The minimum chromium content is 12 per cent, but some contain as much as 40 per cent. The members of this series that have the lowest carbon are the so-called stainless irons, but they are all made by the same processes, so are really steels. They do not require any heat treatment to bring out the stainless properties, while the stainless steels do. The carbon is seldom over 0.60 per cent.

Recently oil refineries have been heavy buyers of castings of this material for equipment used in the cracking of the crude petroleum oils, which have a corrosive action at high temperatures due to a high sulphur content. Castings also have been made for food handling machinery, both to keep the food products free from contamination and to increase the life of the equipment. As ordinary steel castings have a limited period of usefulness in the handling of acids and caustic alkalies, chemical industries have been using increasing quantities in the form of agitator arms, kettles, pipe lines, driers and other parts. The irons have the maximum resistance to corrosion, but are only moderately hard. The stainless steels are also said to take and retain a better polish.

Nickel and nickel-chrome steels were so enthusiastically received by industry in general that investigators were encouraged to study other elements as potential alloys. The most successful of these are the molybdenum and vanadium steels and combinations with elements mentioned previously.

Straight molybdenum steel is not common in castings at present. The molybdenum is usually 0.20 to 0.40 per cent but may be as high as 0.80. The main advantage in using this metal is the relative ease in welding them to other parts in fabricating.

Molybdenum in conjunction with chrominum produces a steel, the use of which is increasing by leaps and bounds. The uncertainty of results that has been troublesome in the past, has been entirely eliminated with improved methods of adding the molybdenum. The outstanding effect of the molybdenum is the unusually high elastic ratio, with high tensile strength and good ductility. The advantage of this steel over chrome-nickel is the ease with which it can

(*Concluded on Page* 1278)

Use Discrimination in Buying Steel Castings

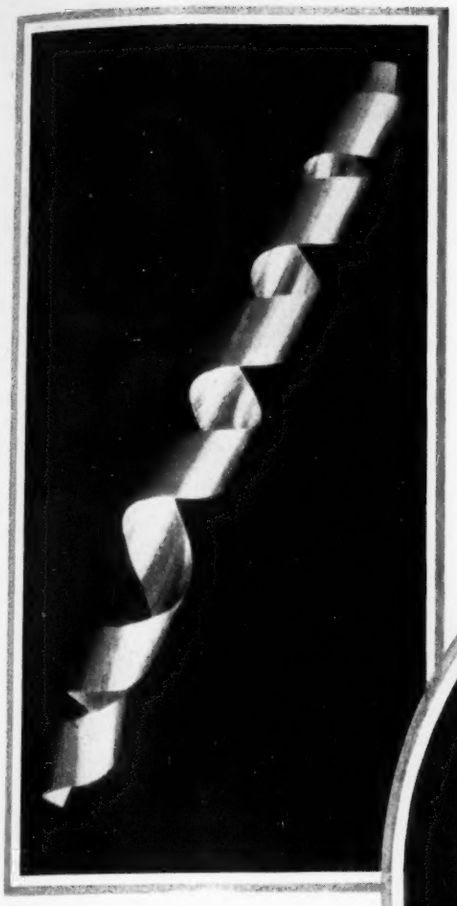
ALLOY steel castings require more care in manufacture, than do castings of plain carbon steel. As cast they are hard and brittle, and unless properly annealed, are apt to remain so. In general, the cast structure is harder to break up, and at the same time it is most essential that this be done. They require a longer annealing at a higher temperature, as a rule. Care must be taken, if surface welding is necessary that such parts be reannealed, as otherwise hard spots are sure to be found on machining.

The real benefits of the alloy additions are not brought out unless the castings undergo a heat treatment. A simple air quench from annealing temperature, followed by a draw at a comparatively high temperature, often accomplishes wonders, as compared to the results obtained by a straight anneal.

Alloy steels cannot be considered a panacea for all the troubles that arise in the use of steel castings. Neither must the user place the blame for isolated poor results, on the contained alloys. The user must use the same discrimination in judging results, that he uses in his judgment of ordinary steel castings, as well as other products.

Alloy steels have come to stay. The steel foundryman must be constantly on the alert to improve quality, and to take advantage of improvements when they arise, so that he will be able to get his share of this large and constantly increasing business.

Tin Plate Thin as Paper Now Produced in American Mills



THIN almost like tinfoil or a heavy grade of paper—so thin in fact that like paper it can be torn easily between the thumb and forefinger, 35-pound or 48-gage tinplate now is being produced successfully in this country at the Farrell and Pennsylvania works of the American Sheet & Tin Plate Co. Output possibly may be concentrated at the former plant. Taken up more as an experiment than anything else, to see if workmen in this country could produce what hitherto had been the exclusive product of the Welsh mills, the American company has met with signal success so far, following much experimentation and the overcoming of many difficulties.

A single sheet or plate cannot be handled without considerable wrinkling or buckling, unless great care is exercised. When it is known that the ordinary sardine can, so easily opened with a twist of the wrist, utilizing the accompanying key for that purpose, is made from 80-pound tin plate, it can be realized how much more easily handled a container made from 35-pound plate would be. Whereas ordinary 30-gage tin plate comes from the rolls eight sheets to the pack, this new product finishes after doubling and redoubling with 32 sheets to the pack. Extreme care therefore has to be used in opening, separating or slitting these packs and usually young women are employed for this purpose. They have attained a marked degree of success in keeping the material practically free from blemishes.

Thus far, the field for the application of this new thin gage tin plate is rather limited. While experiments are being conducted to see if it can be successfully and economically used in other ways, to date but few uses have been perfected. Inner seals of tobacco cans, and the inner seals of containers for high-grade teas and coffees furnish practically the only avenues for its disposition. However, one company has successfully produced vacuums for vacuum tanks for automobiles from this thin gage tin plated steel, and this undoubtedly points to additional adaptations. American ingenuity will in all probability from time to time develop new uses.

At the moment it would seem that more in proportion is used in other countries than in this country for the exportation of various products such as cakes, cookies, crackers, etc., in double-sealed containers for the exclusion of dampness, air, etc. Holland for instance is sending large quantities of cookies, such as chocolate and cheese "sticks" to this and other countries and because of their susceptibility to dampness they have to

(*Concluded on Page* 1283)

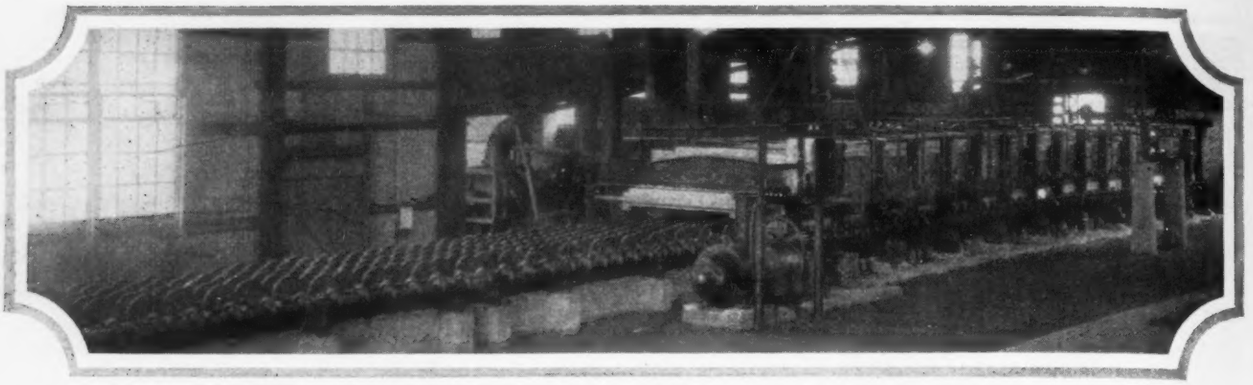


Fig. 1—Typical gas-fired furnace for normalizing steel sheets. The heat-resisting disks, which move the stock through the furnace at a predetermined speed, are actuated by the motor shown near the discharge door

Continuous Normalizing Furnace Reduces Annealing Time

By F. W. Manker

COMPETITION for automotive and full-finished sheets of deep drawing and extra deep drawing qualities, has been sharp in recent years. Many producers have been forced to set up earnings at lower quotations and to improve on their manufacturing processes. The development of the continuous normalizing furnace to heat treat various grades of sheets logically has followed in the wake of these conditions.

About ten years ago studies were made by Marshal and Cochran covering the fundamentals of a heat treatment which is now known as normalizing, in its present form. Their experiments covered a period of four years intensive research and the evidence of their originality is shown in the process patent which they were able to obtain. The exclusive rights to this patent were recently purchased by the Surface Combustion Co., Toledo, O.

The requirements for a satisfactory normalizing furnace are: First, definite automatic control of atmosphere in the heating and cooling zones of the furnace; second, a method of handling single sheets from charging to discharging end of furnace; third, automatic control of rate of heating; and fourth, automatic control of rate of cooling.

The process consisted in bringing the sheet up to a high temperature, cooling to a dull red in the furnace and cooling chamber, roller leveling as it leaves the cooling chamber and piling from the roller leveler. In the past five years, furnaces for this operation have been built to use powdered coal, oil, electricity and clean cold gas. In the past year, many companies producing the highest grade of product have installed a gas-fired normalizing furnace using clean gas. Some installations still operate on oil, electricity and hot producer gas.

The author, F. W. Manker, is vice president, Surface Combustion, Toledo, O.

How Furnaces Are Built

Normalizing furnaces used at the plant of the Empire Steel Corp., Mansfield, O., are typical of the best in this line. This company, besides other products, makes automobile and standard steel sheets and the automobile sheets are treated in the normalizers. There are two of these normalizing furnaces each 100 feet long and 6 feet wide. They are built of brick suitably stayed and insulated and are continuous in operation as the sheets are carried through on roller disks mounted on hollow, water-cooled shafts. The heating period is controlled by regulating the speed of the disks.

The equipment includes 36 gas burners, 18 to a side, of the single valve type with inspirators for exactly and automatically proportioning the air-gas ratio for complete combustion and the correct furnace atmosphere. This atmosphere is slightly reducing and controlled through the use of a carbon monoxide meter. These furnaces are divided into three zones, preheating, heating and cooling. The temperatures in these zones are maintained by three automatic pyrometric controls and will average around 1650, 1830 and 2000 degrees Fahr. starting at the charging end. These furnaces supplanted units of the old type and an immediate saving of 50 per cent in gas consumption was shown. Furthermore a better sheet was produced and little scale was encountered.

Normalizing eliminates at least one box anneal and for some grades of sheets, box annealing is eliminated entirely. When box annealing after normalizing, a temperature of about 400 degrees Fahr. lower should be used. This is because no further change in grain structure is sought and the purpose of the box anneal at that point, is to relieve slight surface stresses set up by cold rolling and pickling. Chemical, physical and microscopic inspections for control are made at various stages in this process and the final product is subjected to an Ericksen or Olsen test.

An alphabetical index and numerical list of United States government master specifications, as promulgated by the federal specifications board, has been compiled and published by the bureau of standards as circular No. 319. The information is complete to Jan. 1, 1928. Copies of the index may be obtained from the government printing office, Washington.

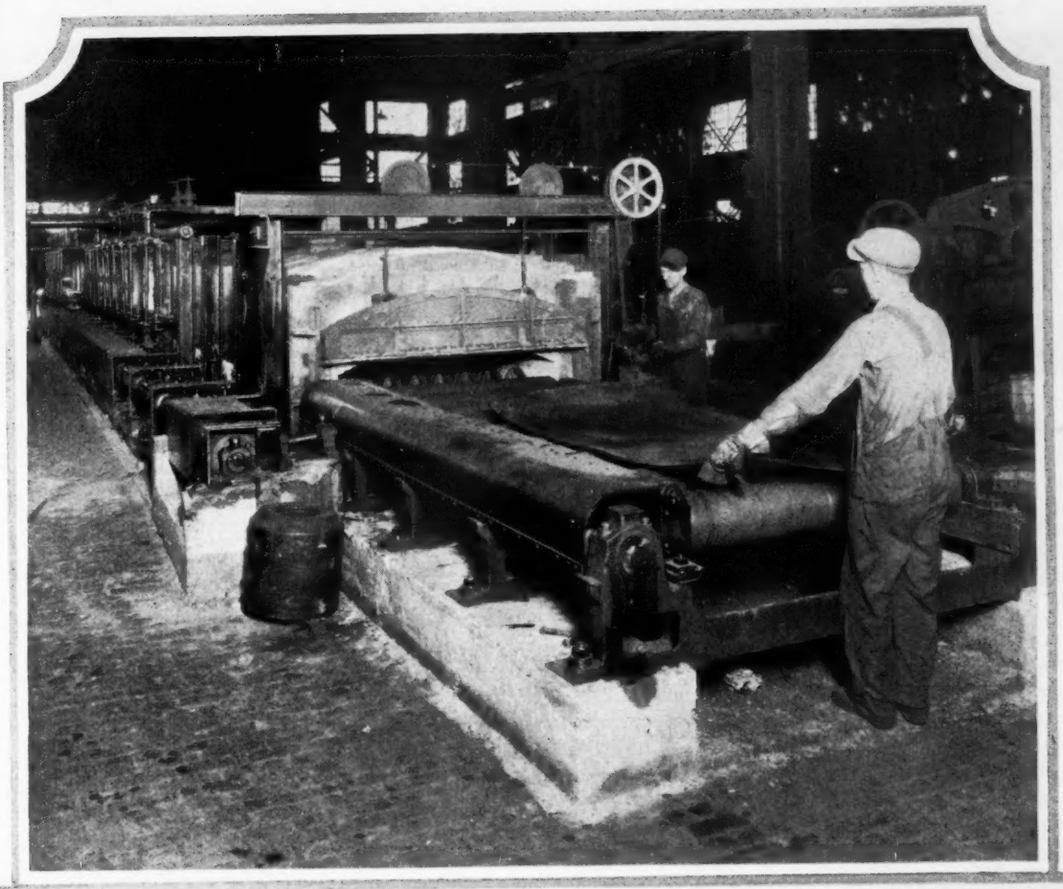


FIG. 2—DISCHARGE END OF CONTINUOUS SHEET NORMALIZING FURNACE OPERATED AT RIVERSIDE PLANT, OTIS STEEL CO., CLEVELAND. THE DISKS ARE MOUNTED ON WATER-COOLED SHAFTS. FIG. 3—NORMALIZING FURNACE INSTALLED BY CENTRAL ALLOY STEEL CORP., CANTON, O. THE FURNACE IS BUILT WITH HIGH, INTERMEDIATE AND LOW TEMPERATURE ZONES

The Court Rules:

A series of decisions in actual civil and criminal cases which are typical of those frequently encountered by small shops in metalworking industries.

By M. L. Hayward

Receivership May Cancel Manager's Contract

THE newly appointed receiver for the insolvent metal company walked into the office and found the manager hard at work.

"Do you work here?" the receiver demanded.

"This looks like it," was the nonchalant reply. "I'm hired from a year till next June."

"Yes, but the insolvency puts an end to the contract."

"Well, if it does that's a breach of contract and entitles me to damages. Either I work away and draw my salary, or quit and draw damages."

On this point the general rule is that the receivership simply cancels the contract of hiring, without constituting a breach of contract on the part of the hiring corporation.

"Where the receiver is appointed to take control of all the property of a company and to assume the entire management of its affairs, the corporate officers are thereby suspended, and in respect of compensation for service thereafter the corporation is guilty of no breach of contract, since the order of the court operates upon both parties alike and prevents the officers and agents from interferring with the receivers' management; and performance of contracts for service to the corporation would be illegal, though the corporation is not dissolved in the proceedings," says a legal textbook quoted with approval in a Pennsylvania case found in 79 Atlantic 647. The New York law, however, favors the contrary view.

To Ship Tar by River

Jones & Laughlin Steel Corp., Pittsburgh, is building two steel barges of 900 tons each for transportation of tar from its coke ovens at its Hazlewood and Aliquippa plants to the plant of the American Tar Products Co., Follansbee, W. Va. About 100,000 tons of tar annually is expected to be transported by water in this way. It will be used in the manufacture of creosote oil for timber treatment. Towing of these barges is said to have been let to the Union Barge Line.

Alloy Steel Castings Find Wide Use

(*Concluded from Page* 1274)

be machined. In actual practice it has been shown that, at the same brinell hardness, a considerable saving can be made in the average time of each machine shop operation. The drawing temperatures of this steel are unusually high and it is less susceptible to overheating. Molybdenum is almost always kept within 0.20 to 0.40 and chrome 0.70 to 1.10 per cent. Carbon is usually 0.20 to 1.00 for the general run of work. Steel of this analysis is especially tough and has been used with success in blooming mill rolls. If the carbon is allowed to rise above this figure to almost 2.00 the rolls are extremely hard and rigid, and have excellent resistance to abrasion.

The addition of molybdenum to a nickel-chrome steel results in a metal that should be of particular interest to foundrymen. It retains all of the good qualities of the nickel and the chrome, the ease of machining of the chrome-molybdenum steel, and, in addition, has the peculiar characteristic of hardening almost as hard by air quenching as if a liquid medium were used. It is the solution, in large castings, or castings, the nature of which makes water or even oil quenching precarious. Distortion can be kept at a minimum, internal strains lessened, fire cracks eliminated, and the cost of the heat treatment appreciably lowered. Quite a bit of the finish can be pared off the patterns, thus saving additional time and expense in machining. This makes nickel-chrome molybdenum steel the ideal metal for cast die blocks. These are steadily displacing forgings, due to the heavy expense of sinking the die into a solid block. They can also be resunk very cheaply, as they can be remachined without annealing. With low carbon, at or nearly 0.30 and higher nickel and chrome, a steel of very high ductility and elastic limit is obtained. It is highly recommended for high pressure fittings, for railroad knuckles, and wherever great dynamic strength is necessary.

Castings of chrome-vanadium steel have been made for some time but have never come into general use. Vanadium steel specifications are always "minimum 0.15, 0.18 desired," chrome 0.80 to 1.10. It also has high tensile strength and good ductility, but its characteristic is its resistance to fatigue. Since the steam locomotive has had its power and weight increased, many frames and other massive parts have been made in alloy steels. Chrome-vanadium steel has been most common in these castings.

Spanish Ore and Iron Output Larger

Last year was one of the most satisfactory experienced by Spanish metallurgy since the war, in iron ore and pig iron and steel, reports Assistant Commercial Attache E. D. Hester, Madrid, to the department of commerce.

Tonnage of iron ore in Spain in 1927 reached 4,906,000, 50 per cent higher than in 1926 and highest since the war. Production of pig iron also exceeded postwar record with 612,000 tons, 30 per cent higher than 1926. Steel output last year gained 10 per cent over 1926 to 664,000 tons.

Improvement in the position of the Spanish iron ore mining industry is attributable to the return of Great Britain, Spain's best customer for her iron ore, to the world market for this product after the seven months closing 1926 in which she made little iron and steel, and the marked improvement in demand for iron and steel products within Spain.

Open-hearth steel first was made in the Birmingham district in 1888.

Lower Earnings for First Quarter Reflect Weak Price Situation

By John W. Hill

THE anomaly of great productive activity in the iron and steel industry accompanied by low earnings was again exhibited in the first quarter of 1928. During that period the industry turned out 12,544,156 tons of open hearth and bessemer ingots, a gain of 3 per cent over the total of 12,137,192 tons of ingots in the corresponding months of 1927. A new peak of output for all time was established, yet at the same time 11 of the leading iron and steel companies reported earnings, which in the aggregrate fell 20 per cent behind those of the first quarter of 1927. This compares with a gain in earnings of 15 per cent for about 80 companies representing a large number of lines.

The list of companies is shown in the accompanying table. It includes the United States Steel Corp., the larger independents and a few of the relatively smaller independents. These companies, representatives of the entire industry, had earnings in the first three months of 1927 of $35,756,225 against $44,980,449 in the first quarter of 1927.

In seeking an answer to the business riddle presented by these facts it is necessary to look at the price level. Notwithstanding efforts on the part of producers to lift selling prices of iron and steel products to more profitable levels, the structure of quotations during the first quarter remained below that of one year ago. In cases where nominal prices were higher than at the low ebb of late last year, the better quotations did not apply to first quarter business. This was mostly placed at the levels obtaining in the closing weeks of 1927.

As measured by IRON TRADE REVIEW'S composite market average of 14 iron and steel products, the price level of the iron and steel industry stood about 3 per cent lower in the first months of 1927 than in that period of one year before. It was somewhat higher than in the last quarter of 1927, but as has been pointed out the first quarter business largely went over the counter at prices prevailing in the last quarter of 1927. This would mean a decline of about 5 per cent from one year ago. Meanwhile prices of all commodities at wholesale show an advance over one year ago of about 6 per cent.

Second quarter business is moving at a somewhat better level, though still below hopes and expectations on the part of producers. It seems probable, however, that second quarter profits will make a better showing relative to 1927 than the first quarter results did. This is indicated by the fact that in April last year production had started to recede. In that month this year a new high mark of output in steel ingots was recorded, with business in the trade promising to hold at fairly even levels over the coming weeks.

Some of the companies in the industry in the first quarter of 1928 made rather startling showings when compared with one year ago. A few made favorable exhibits. The United States Steel Corp. reported earnings after all charges before dividends of $21,331,871 compared with $26,327,362 in the first quarter of 1927, a decline of 19 per cent. Most of the larger independents showed even greater declines.

A number of independents had more favorable showings. The largest percentage gain was shown by the Otis Steel Co. with an increase in earnings of 65 per cent, reflecting larger and more efficient production of the company's finished sheets for the automobile trade, and other finished material. The Central Alloy Steel Corp. reported a 60 per cent gain in earnings compared with the first quarter of 1927. This partly reflected improvements in demand for the company's special products for the automobile trade. The Gulf States Steel Co. showed a gain of 42 per cent.

All in all the exhibit of earnings seems to indicate that the iron and steel industry has far to go in the direction of profitable operations. Apparently in this period the larger companies, the bulk of whose output comprises the heavier and less finished products, are unable to make as good earnings as those with specialty lines or with productive facilities for taking the major part of their product through the more highly finished rolling processes.

For the industry in general, however, it may be said that the outlook for 1928 is somewhat more favorable than in 1927, because the sharp slump beginning last spring and carrying through the summer and fall, is unlikely to be repeated this year. A more steady production rate through the remainder of year may help the industry to overcome some of the unfavorable showing in profits compared with 1927.

Earnings Down 20 Per Cent from 1927

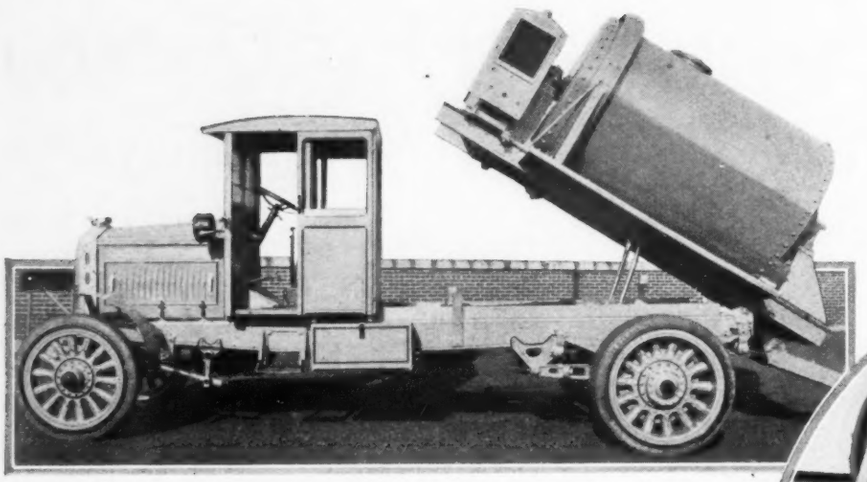
Company		First quarter earnings*	Per cent change first quarters, 1928 over 1927
United States Steel Corp.	1928	21,331,871	
	1927	26,327,362	19—
Bethlehem Steel Corp.	1928	3,384,718	
	1927	5,618,038	39—
Youngstown Sheet & Tube Co.	1928	1,663,516	
	1927	2,256,043	26—
Jones & Laughlin Steel Corp.	1928	2,903,457	
	1927	3,658,724	20—
Republic Iron & Steel Co.	1928	487,331	
	1927	1,044,422	53—
Wheeling Steel Corp.	1928	1,024,213	
	1927	992,252	3+
Inland Steel Co.	1928	2,291,442	
	1927	2,130,926	7+
Colorado Fuel & Iron Co.	1928	552,020	
	1927	1,619,348	66—
Central Alloy Steel Corp.	1928	958,520	
	1927	598,315	60+
Otis Steel Co.	1928	821,288	
	1927	497,924	65+
Gulf States Steel Co.	1928	337,849	
	1927	237,095	42+
Total 11 companies	1928	35,756,225	
	1927	44,980,449	20—

*After all charges, before dividends.

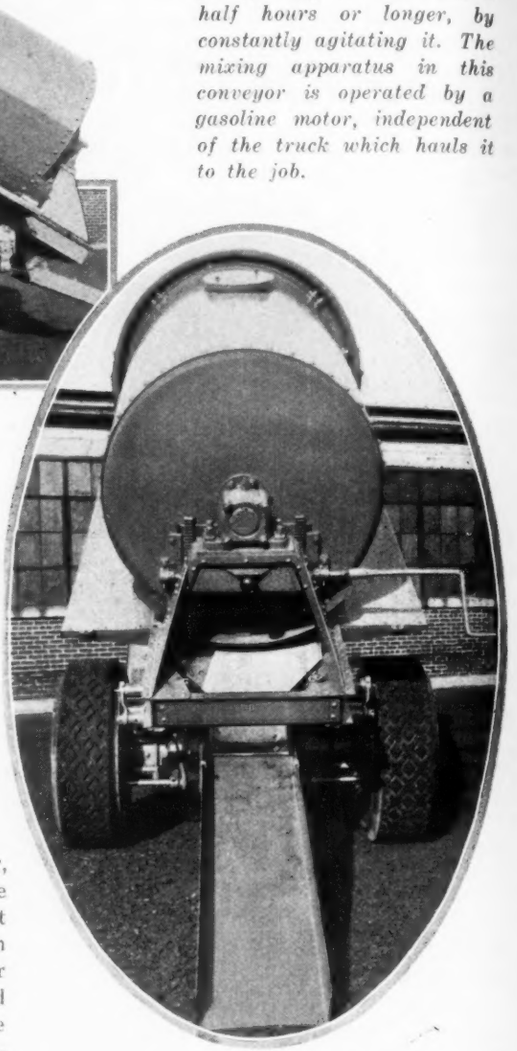
Coal, Coke Stocks Lower

Stocks of bituminous coal in hands of consumers declined to 48,300,000 tons April 1, from 55,500 tons Jan. 1 according to a summary by the department of commerce. Steel plants have 35 days supply, compared with 45 days Jan. 1 and 36 days Feb. 1. Other industrial plants have 39 days supply.

Stocks of by-product coke at producers' plants were 750,000 tons April 1, compared with 787,000 tons Jan. 1.



CONCRETE can be kept in satisfactory condition for pouring for two and a half hours or longer, by constantly agitating it. The mixing apparatus in this conveyor is operated by a gasoline motor, independent of the truck which hauls it to the job.



Hauling Mixed Concrete "to the job" Develops New Steel Equipment

By E. C. Kreutzberg

A NEW use for steel has developed out of the fact that a method has been devised for transporting ready-mixed concrete from central mixing stations to places where it is to be set in forms. The steel is fabricated into cylindrical containers which the Clinton Motors Corp., Reading, Pa., mounts on 6 and 7-ton motor truck chassis. Concrete is dumped into the containers at central mixing plants, and thence hauled to the job.

This plan, originated by A. E. Hoffman, president of the Clinton corporation, is based on the fact that concrete may be transported for a considerable length of time and a long distance without deterioration, provided it is agitated constantly. The concrete carrier is provided with a 2-cylinder gasoline engine, mounted just behind the driver's seat, entirely independent of the main truck motor. The gasoline engine rotates the cylindrical tank, which contains the concrete, at a uniform rate of speed.

A series of tests conducted at the civil engineering testing laboratories of Columbia university revealed that the concrete thus hauled is stronger, at the end of a 28-day setting period, than concrete which is poured immediately after mixing. Tests with a 1:3:6 mix showed that the batch, poured right after mixing, had an average compressive strength of 1397 pounds at the end of 28 days. A batch of the same composition, after being hauled two hours and 12 minutes in one of the conveyors, showed a compressive strength of 1690 pounds at the end of 28 days. Agitation of the mix appears to result in a more uniform bond which improves the quality of the concrete.

The conveyors which are manufactured by the Clinton corporation are intended to haul concrete from central mixing stations to points which may be reached within two and a half hours. Experience has shown, however, that concrete may be hauled for much longer periods without deterioration. For instance, a load of three cubic yards of mixed concrete was hauled recently from Reading to New York city, and when dumped in the forms in New York gave as good results as fresh mixed concrete. During the entire trip the mix was kept in constant agitation.

The first truck equipped for conveying ready-mixed concrete was delivered to a user last August, and soon thereafter orders were received from a number of concerns located principally in New York and Newark, N. J. The initial orders have been followed by repeat orders, which in some cases involved as many as 20 to 50 units. The principal buyers are the large sand and gravel companies. The use of steel for this purpose appears to show promise of continued growth.

The conveyor is a tank 7 feet long and 54 inches in diameter. The shell is formed in bending rolls from ¼ or ⅜-inch tank plate, the seam of the shell being arc welded. The ends are ordinary flanged heads, obtained in that form from a plate mill, and are ½-inch thick. They are set in the openings in the shell, rivet holes are drilled and the shell and heads riveted together. This assembly is provided with loading and discharge openings, with circular racks for rotating the conveyor and with housings for supporting it on an underframe.

As concrete contains considerable liquid it is necessary that the openings be provided with hermetical seals to prevent loss by leakage and con-

sequent deterioration of the concrete. Dumping of the concrete is effected through an opening in the rear head. This opening is fitted with a cover made of ½-inch steel plate. The cover slides in grooves formed of ¾ x 2½-inch steel bars which are riveted to the head at each side of the discharge opening. The cover and that portion of the head which it engages are carefully inspected to make sure they are level and capable of forming a perfect seal. At the sides of the cover cast steel racks are riveted in place. These are engaged by cut pinions mounted on a length of shafting which is supported by bearings that also are riveted to the head.

The shafting is extended to form a handle, so that the rack and pinion device may govern the size of the opening and the rate of discharge, and it also makes it possible to hold the cover tightly against the head while the conveyor is being rotated.

As the conveyor is mounted horizontally on the truck chassis, the opening through which the mixed concrete is passed is located in the side of the shell. This opening is provided with a steel plate cover hinged to joints that are riveted to the shell, and the cover is held tightly against the shell by means of a latch.

A rectangular frame made of 6-inch I-beams, riveted together, forms the underframe for the conveyor tank. Housings are built up at each end of the underframe to support the tank. The housings are formed of ⅝-inch plate, on top of which are riveted several layers of ¾-inch and 1-inch plate. On these housings the bearings are riveted. The bearings are of the double roller type and are designed to take not only the weight but the end thrust which develops when the conveyor is elevated at one end to discharge its contents. This elevating is accomplished by means of a standard underbody hoist which is operated from the truck transmission.

Steel is used in other ways in the manufacture of the conveyor. For rotating it there is a circular rack, cast in segments, which is riveted to the perimeter of the shell at its forward end, and the rack is actuated by a pinion driven by the 2-cylinder motor. The gearing is covered by a guard made of 12-gage black sheets. The guard is held in place by braces made of ¼-inch plate and 1-inch rounds. At each side of the conveyor is a runway for the use of the workmen. The runways are of 8-gage cold rolled strip steel and are supported on brackets formed from the same material and riveted to the I-beam underframe. The dumping troughs are made of 12-gage black sheets and have a dumping range of 16 feet.

A feature of conveyor trucks is their appearance. They are painted in bright colors when completed.

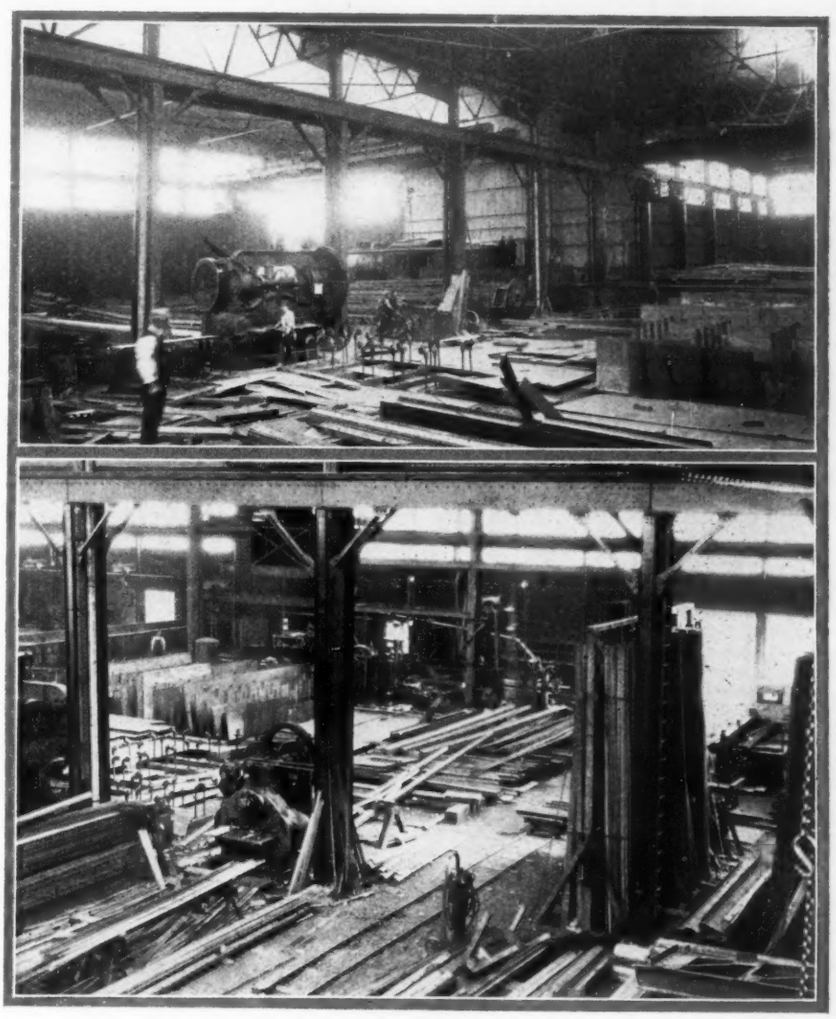
Expands Facilities for Warehousing Steel Products

ROUNDING out its properties to increase its service in supplying steel to Cleveland district manufacturers, the Paterson-Leitch Co. has completed and placed in operation a large addition to its warehouse at 900 East Sixty-ninth street, Cleveland. The addition is a 200 x 80-foot bay, served by a double 5-ton trolley crane, the sections of which were fabricated by the Paterson-Leitch Co. in its structural shop. The long middle bay, which also has been extended recently, is served by a 10-ton crane.

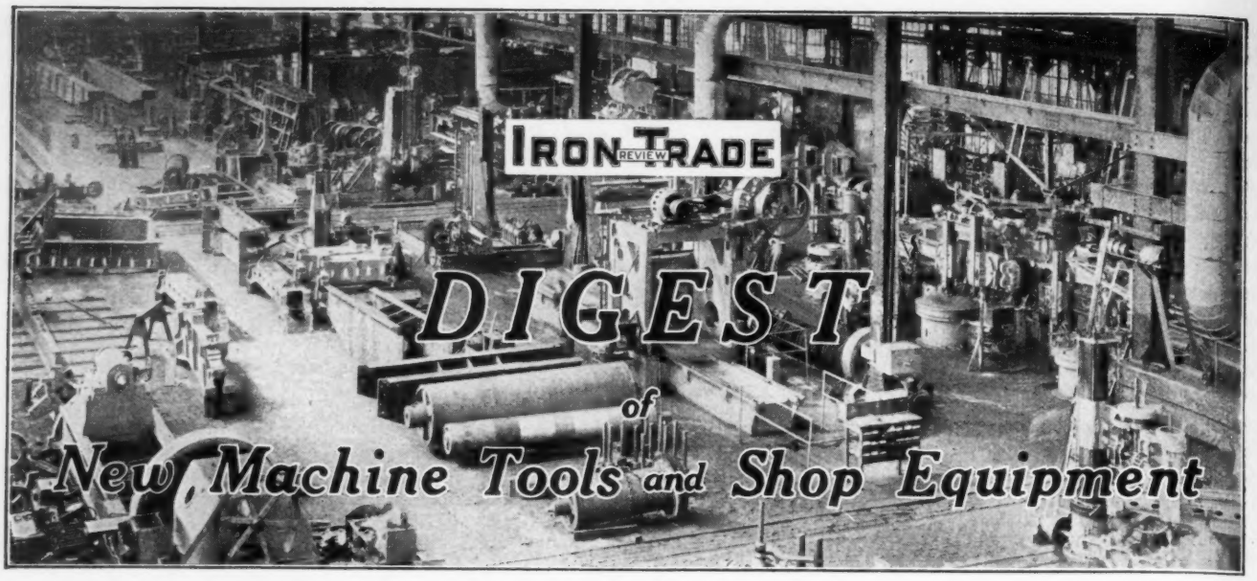
Between 5000 and 6000 tons of steel is carried in stock by the Paterson-Leitch Co., consisting largely of reinforcing bars, structural shapes, hot rolled bars and plates, both plain and checkered. In addition, bands, hoops, wire and strip steel are handled. Included in the equipment for fabrication of this stock are plate and angle shears, hot friction saw, structural punch, double end and single end bar benders, and a spiral machine used for fabricating reinforcement for concrete columns.

The warehouse is so arranged that truck deliveries may be made directly from three bays, eliminating the necessity for handling material to a loading platform before placing it in trucks. A spur from the New York Central and Pennsylvania railroad lines enters the main bay, facilitating the handling of incoming material.

C. J. Paterson is president of the company, W. J. Shenk, vice president, R. I. Leitch, treasurer and L. C. Spieth, secretary.



Top: View of new bay looking through main section, showing plate shear in center. Bottom: Looking from new bay through main section to structural fabricating department and one of truck entrances



Designs Line of Direct-Current Motors

No. 121

Century Electric Co., 1806 Pine street, St. Louis, has placed on the market a new line of direct-current motors designed and built along lines of the company's repulsion-start induction single-phase motors. The field is a two-pole laminated steel structure with the compound-wound field coils wound on forms, well insulated and taped. Both field and armature coils are thoroughly treated with insulating paints to withstand the dampness frequently surrounding installations in basements and humid tropical climates. The commutator, liberal in size, is made from rolled copper bars and insulated with mica. Both brushes and commutator are generously proportioned to insure long service. The brushes are carried in a box-type brush holder attached to the field frame and do not require adjustment during the life of the brushes. In operation, these motors are claimed to be practically noiseless. Magnetic noise is negligible; brush noise is reduced by proper selection and fitting of brushes; and the armature is given both a static and a dynamic balance to eliminate vibration. The wool-yarn system of lubrication assures at least one year's continuous operation without reoiling. Temperature rise in the hottest spot is not more than 40 degrees Cent. The motor is built in standard sizes from 1/6 to ½ horsepower at speeds corresponding to standard speeds of alternating current motors.

No. 121—New Direct-current Motor

Switches of Drum Type Control Hoists

No. 122

General Electric Co., Schenectady, N. Y., has announced a new line of primary resistance drum switches for use with squirrel-cage induction motors on small cranes, hoists, machine tools, etc. It is a primary reversing switch and the capacity is rated in horsepower. It is designed for wall mounting and is made in two forms; one for hoists where the motor is overhauled in the lowering direction and the other where the motor is not overhauled in the lowering direction. The former provides four points hoisting and one

Iron Trade Review's Calendar of New Equipment

No.	Item	Builder	Comment	Date Described
98.	Automatic rod magazine	Brown & Sharpe Mfg. Co.	Feeding device for automatic screw machines	April 19
99.	Portable conveyor	Link-Belt Co.	Light-weight; motor-driven	April 19
100.	Combination bench machine	Niagara Machine & Tool Works	Turns, wires and burrs sheet metal	April 19
101.	Portable electric tools	Hisey-Wolf Machine Co.	Two drills and bench grinder	April 19
102.	Packing cutter	Chickasaw Machine & Foundry Co.	Cuts fibrous packing to exact fit	April 19
103.	Gear cutting machine	Brown & Sharpe Mfg. Co.	Automatic; redesigned; more productive	April 26
104.	Board drop hammer rolls	Chambersburg Engineering Co.	Roller bearing; increases board life	April 26
105.	Automatic drilling machine	Hammond Mfg. Co.	Six-spindle; drills cap screw heads	April 26
106.	Hand belt surfacing machine	Porter-Cable Machine Co.	Larger size; for wood or metal	May 3
107.	Turret lathe cross slide	Warner & Swasey Co.	Compound type for taper work	May 3
108.	Multiple molding machine	Tabor Mfg. Co.	For standard split pattern practice	May 3
109.	Storage battery lift truck	Lakewood Engineering Co.	For handling cable reels	May 3
110.	Jig boring machine	Pratt & Whitney Co.	Small size for precision work	May 3
111.	Pneumatic press	Hanna Engineering Works	High-speed, vertical	May 3
112.	Hand nibbling machine	National Machine Tool Co.	Cut sheets metal in irregular shapes	May 3
113.	Grinding machine	Kling Bros. Engineering Works	High-speed, double-end heavy-duty	May 3
114.	Motor starters	General Electric Co.	Direct-current, general purpose use	May 3
115.	Speed reducers	Palmer-Bee Co.	Simple design; herringbone type	May 10
116.	Automatic brake	General Electric Co.	For super-synchronous motors	May 10
117.	Welding and cutting torch	Alexander Milburn Co.	Utilizes same tip for both	May 10
118.	Air compressor	Ingersoll-Rand Co.	Portable; smaller size	May 10
119.	Press brake	Cincinnati Shaper Co.	All-steel construction; larger size	May 10
120.	Knife switches	Westinghouse Electric & Mfg. Co.	Back-of-board type	May 10
121.	Electric motor	Century Electric Co.	Direct-current; 1/6 to 1/2 horsepower	May 17
122.	Drum switches	General Electric Co.	For small hoist, crane and machine tools	May 17

point lowering, and the other four points forward and four points reversing. The latter is designed for use with machine tools or general purpose application. The switches are designed for operation on maximum primary voltages of 550 and the maximum horsepower rating for 2 or 3-phase is 15.

Make 48-Gage Tin plate

(*Concluded from Page* 1275)

be securely packed. They come in tin boxes with an inner seal and this thin gage material is admirably adapted for this purpose. No doubt, America will make a bid for this foreign business and instead of being as heretofore an importer of 35-pound 48-gage tin plate to the extent of not more than a dozen 25-ton carloads annually, it may become an exporter of an even larger quantity. Since only 1064 gross tons of all kinds of tin plate were imported by the United States in 1927, the portion of that tonnage represented by this thin gage material is relatively small.

Militating against the widespread and popular usage of these thin tin plates is the element of cost. Production costs not only are high, but costs of handling are necessarily high as well, due to the difficulties encountered in trying to avoid buckles, wrinkles, etc. The initial year's output will possibly not exceed 20,000 base boxes, although 50,000 boxes annually was the goal in mind when the makers took up the proposition and fostered it. The largest individual customer will probably not use more than three or four carloads in the first year, but as indicated, efforts are constantly being made to uncover new uses.

During the recent World war, some 70-pound tin plate was utilized for the manufacture of emergency ration kits for the soldiers and possibly a peacetime application for this idea would be a ration kit holder for airplane travelers. They could undoubtedly be made of this new 35-pound material and could then be quickly and easily opened with an ordinary penknife or in an emergency could be cut open with a stick of wood. In the marine field many uses undoubtedly can be found since it so often is necessary to have containers with inner seals to exclude the damp, salt air and prevent deterioration. Candy for export could be packed first in a tin box made of this thin material and then packed in cardboard. Mailing tubes for valuable papers, such as blueprints, tracings, drawings, etc., could be faced at their two ends with this light tin plate and made more efficient as carriers. Cardboard containers such as for soap powders could be equipped with tops and bottoms made of it to make them more efficient since holes could so easily be punched in the top for sifting purposes. Many uses will doubtless be developed in the pharmaceutical field. Entire cans cannot be made of it since it is too light. They would buckle when packed, especially when piled one on top of the other. For some purposes, however, it might prove economical to pack three or four filled cans in a wooden frame or crate to aid in shipping and piling.

Initially the American Sheet & Tin Plate Co. is making the tin plates 17 x 23 inches, but is able to roll them in sizes up to 23 x 25 inches. Other sizes will be added as demand grows and new adaptations arise.

Simplified Invoice Form Is Winning Its Way

WITH the view of reducing avoidable waste in office operations, several nationally known trade associations and business organizations have co-operated in producing the simplified invoice form shown below. The group includes the National Association of Purchasing Agents, Railway Accounting Officers' association, National Association of Cost Accountants, Controllers' congress of National Retail Dry Goods association, Ford Motor Co., General Electric Co., Westinghouse Electric & Mfg. Co., Yale & Towne Mfg. Co. and Worthington Pump & Machinery Corp. In response to the request of these interests, the division of simplified practice of the United States department of commerce is acting as a co-ordinator for the group and is now assisting it in promoting the application and use of the form. To date, the simplified invoice has been accepted by 27 trade associations and countless firms and corporations have accepted this form as their standard. Others say they will do so when stocks of their present individual form run out.

SIMPLIFIED INVOICE

[YOUR Name, Address and Trademark Go Here]

CUSTOMER'S ORDER NO. & DATE

REQUISITION NO.

CONTRACT NO.

REFER TO INVOICE NO.

INVOICE DATE

VENDOR'S NOS.

SOLD TO

SHIPPED TO AND DESTINATION

DATE SHIPPED

FROM

PREPAID OR COLLECT?

CAR INITIALS AND NO.

F. O. B.

HOW SHIPPED AND ROUTE

TERMS

FOR CUSTOMER'S USE ONLY

REGISTER NO. | VOUCHER NO.

F. O. B. CHECKED

TERMS APPROVED | PRICE APPROVED

CALCULATIONS CHECKED

TRANSPORTATION

FREIGHT BILL NO. | AMOUNT

MATERIAL RECEIVED

19__

DATE | SIGNATURE | TITLE

SATISFACTORY AND APPROVED

ADJUSTMENTS

ACCOUNTING DISTRIBUTION

AUDITED | FINAL APPROVAL

QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT

Labor-Saving Machinery Fosters Prosperity, Experiences Show

By Charles H. Norton

ONE of the greatest facts of history is the broadening of human life through the development of machinery. Man owes a great debt to the marvelous machines which multiply his power and his pleasure.

All industrial history shows that to be true, but recently we have had a number of calamity howlers spreading that age-old fallacy that labor-saving machinery was causing unemployment. The cry was started by a politician, who told of our national prosperity braggadocio was a myth; that there were 4,000,000 unemployed people in this country, and that the army out of work was increasing every minute. That 4,000,000 has gradually dwindled until the latest estimate brings it down to 1,000,000, which is the number that we always have out of employment in this country apparently every day in the year.

Men out of employment? Of course there are, and always will be; and no doubt there are men who are not needed at their old employment because of new machinery. That is not strange; that will always happen. That has nothing to do with the value to the world of labor-saving machinery.

Twenty-eight years ago cylindrical work from 10 to 12 inches long and 2 or 3 inches in diameter required about an hour to grind to a thousandth limit. Today such pieces of work are ground in large numbers in 30 seconds to a 0.025-inch limit.

In 1907 automobile workmen were grinding four piston pins an hour to a limit of a thousandth of an inch. Today that number has increased to over 200 and to a much smaller limit.

In 1904 there probably were not more than 100 grinding machines of all varieties and makes in the few automobile plants that then existed. It is estimated by a technical journal today that there are now 68,000 of all varieties and makes.

Most of the operators of those machines today were children in school in 1904, and as they came on to the field of action they had to have something to do. What would you have done if you had not had those 68,000 machines to set those 68,000 boys to work?

Then, when you realize that in the automobile industry there are 795,000 labor-saving machines; supposing you had not had those ready for the 795,000 people to work on, what would you have done? Make automobiles by hand? You could employ six or eight times as many people? No, you could not; and nobody could buy the automobiles, nor would want them after the purchase. An automobile made by hand would go to scrap in the first hundred miles.

Factory workers in our automobile industry number 375,000; engaged with parts and accessories, 320,000; tire industry, 100,000; dealers, garagemen, repair shops, gasoline distribution, and professional chauffeurs number about 570,000.

So the automobile industry is furnishing employment for a total of 3,365,000. And all because of what? Because labor-saving machinery made it possible to produce an almost faultless car for the price that almost everybody can pay. At least, one person in every six in our country has a car.

The president of the Packard Motor Car Co. said recently that if it had not been for the introduction of grinding machinery, and grinding processes, a car of the quality of the better cars today could be owned only by a multimillionaire; and there would be so few made that the industry would have to close down. Without labor-saving machinery the automobile would have been impossible.

Our inventors, our engineers, our designers have been thinkers all this time. A recent writer calls attention to the fact that Germany succeeded in massing her best intelligences on military problems, and became the greatest fighting machine the world has ever seen. England massed hers on government problems, and England has had a very efficient machine for social control. This country has massed its best intelligence on industrial problems, with the result that we have built the greatest industrial machine the world has ever seen.

Because of our national attitude of respect for labor and service, no matter how humble, and the intelligence we have brought to our industries, for the first time in all history the masses here are living in a state of physical comfort. It is something to be proud of. This has been the achievement of our captains of industry, our engineers and machinists, and our industrial thinkers. And now that we as a people are comfortable instead of miserable, we are more and more enjoying music and art, and are fast becoming a nation of culture.

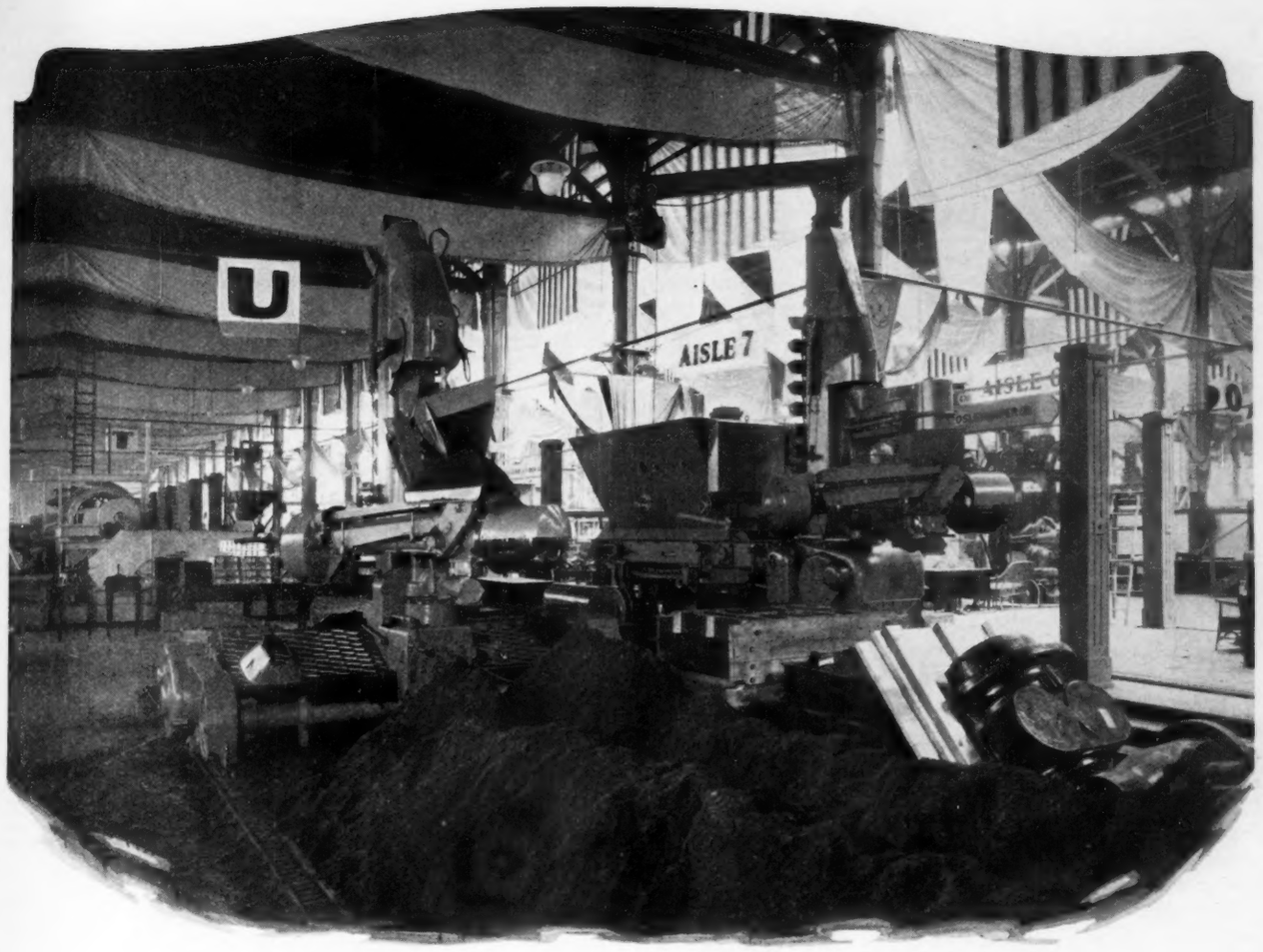
Abstract of address to New Britain, Conn., branch of American Society of Mechanical Engineers, April 25. The author is associated with Norton Co., Worcester, Mass.

"Wolf" Cry Heard Many Times Before

I have been in industry now for 62 years. I have heard this cry about labor-saving machinery many times during those years. It comes up periodically. If you live long enough, you will hear it a lot more times. As long ago as 1866, *the year when I started my work in the machine shop, there was calamity howling about labor-saving machines. Thousands of soldiers had come back from the Civil war, and had nothing to do. Timid people would look for something wrong, and they warned all of us mechanics that we must stop making labor-saving devices, or nobody could have work.*

That was almost a generation ago, and somehow we have found employment for the tremendous increase in population in that 62 years; and all who have been employed in our industries have operated some kind of labor-saving machine or labor-saving device. Labor-saving machines have increased with the increase in workers. According to the calamity howlers of that time, our streets should now be filled with ragged, hungry men, and our country reduced to poverty. Has it happened? No. Just the opposite has happened.—CHARLES H. NORTON.

A World Automobile congress is to be held in Rome, Italy, Sept. 25-28, it has been announced recently. The meeting will be followed by trips to Milan and Turin.



The attractive operating exhibits of molding equipment reflect refinements in design and construction

Pronounce A. F. A. Show "Best Ever"

Twenty-first Exhibition at Philadelphia Reflects Marked Improvement in Equipment and Supplies Since 1926 Event

SHORTLY after 10 o'clock Monday morning, when the doors of the Commercial museum, Philadelphia, were opened to the twenty-first exhibition held under the auspices of the American Foundrymen's association, early arrivals pronounced it the greatest display of foundry equipment and supplies ever held.

The Philadelphia show is one of the few in which all of the booths have been under a single roof and on the same floor level. In point of floor space occupied it ranks second to the Detroit event in 1926. It ranks third in number of exhibitors, yielding first place to the Detroit and second place to the Columbus shows.

If a keen observer were to analyze the various exhibits for the purpose of determining what is the outstanding point of significance, he doubtless would say that it is the trend toward mechanization reflected so unmistakably in many of the displays. Practically every piece of equipment designed for sand preparing, molding or pouring is served by a material handling device. On all sides are evidences of the modern policy that the workman is to do as little manual work as possible and the moving, carrying and lifting is to be performed by machinery.

Show Material Handling Equipment

This conclusion is strengthened by the number of exhibits devoted to material handling equipment. A wide range of cranes, monorails, hand and power-operated hoists, tractors and conveyors is shown by numerous exhibitors. Overhead handling equipment is being demonstrated by American Engineering Co., Philadelphia; American Monorail Co., Cleveland; Box Crane & Hoist Corp., Philadelphia; Cleveland Crane & Engineering Co., Wickliffe, O.; Louden Machinery Co., Fairfield, Iowa; Northern Engineering Works, Detroit; Reading Chain & Block Corp., Reading, Pa.; Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.; Yale & Towne Mfg. Co., Stamford, Conn.; Chisholm-Moore Mfg. Co., Cleveland; Whiting Corp., Harvey, Ill.; Chicago Pneumatic Tool Co., New York and Ingersoll-Rand Co., New York.

Several types of buckets are shown in operation by the Blaw-Knox Co., Pittsburgh; Hayward Co., New York, and G. H. Williams Co., Erie, Pa. Electrical industrial trucks are exhibited by the Yale & Towne Mfg. Co., while the Mathews Conveyor Co., Ellwood City, Pa., is displaying a conveyor loop 10 x 20 feet assembled from sections of heavy-duty foundry

roller conveyor line. The Link-Belt Co., Chicago, is demonstrating a mold conveyor and displaying speed reducers, belt conveyor idlers, shakeout riddles, elevating machinery, etc.

Display Melting Units and Core Ovens

SEVERAL different types of electric melting furnaces are exhibited by the Detroit Electric Furnace Co., Detroit; the Pittsburgh Electric Furnace Corp., Pittsburgh, and the Ajax Electrothermic Corp., Trenton, N. J. The Detroit Electric Furnace Co.'s exhibit consists of a 100-kilowatt furnace with a capacity of 350 pounds per hour, with a transformer and control equipment.

A 125-pound an hour electric furnace melting gray iron was in operation at the booth of the Pittsburgh Electric Furnace Corp. The metal was poured into a permanent mold machine exhibited by the Holley Carburetor Co., Detroit. The Ajax Electrothermic Corp. is showing a high-frequency melting furnace and an induction type and a number of accessories.

Monarch Engineering & Mfg. Co., Baltimore, has on display a variety of melting furnaces both of the crucible and noncrucible types for use with oil or gas as fuel.

A cupola of the continuous type is being displayed by the Whiting Corp., Harvey, Ill. This cupola has a positive safety tuyere, with a vertical fusible plate and ganister lined tuyere elbows. The company also is featuring a new type of helical geared ladle, with ball bearing tipping mechanism, and a small-sized dust filter for restricted headroom. The Titgen-Eastwood Co., Philadelphia, also is exhibiting a cupola.

Continuous type core ovens are featured by several manufacturers. Young Brothers Co., Detroit, is showing a large vertical type continuous oven and a model of a tunnel type continuous core oven. A rolling drawer type core oven, a rack type oven, and a vertical type continuous core oven feature the display of the Foundry Equipment Co., Cleveland. The Paul Maehler Co., Chicago, is operating a rack type core oven equipped with gas heater and temperature control equipment. That company also is showing several types of heaters and blowers. The display of the Swartwout Co., Cleveland, consists of a drawer type core oven, a portable type oven, and a typical lift door for a rack or car type oven.

Several types of annealing boxes are being shown by the American Brake Shoe & Foundry Co., Chicago. An automatic die and mold cutting machine and a line of flexible shaft grinders features the display of the Keller Mechanical Engineering Corp. Brooklyn, N. Y., safety equipment for foundry workers is being shown by the Pulmosan Safety Equipment Corp., Brooklyn, N. Y. Two metal cutting band saws are operated by the Wm. Laidlow Inc., Belmont, N. Y.

Steel window sash, pivoted windows, skylights and roof designs are shown at the booth of David Lupton's Sons Co., Philadelphia. Information on the work of the company is being presented by the Charles C. Kawin Co., Chicago. The Federal Foundry Supply Co., Cleveland, is exhibiting sand control apparatus for use in foundry laboratories, and foundry supplies.

Reliance of foundry operation on compressed air again is emphasized by the exhibits of pneumatic equipment and supplies. The Sullivan Machinery Co., Chicago, is demonstrating an angle compound compressor, 16 x 9¾ x 10, with an automatic stop and start control. The Chicago Pneumatic Tool Co., New York, is demonstrating a new compressor, 13½ x 8 x 10, and displaying chipping hammers, sand rammers, and other portable pneumatic tools. The Ingersoll-Rand Co., New York, is demonstrating a new line of sand rammers and a new grinder for slab work. A rammer designed solely for ramming pipe is exhibited. Other items include an extension to the company's line of riveting hammers.

Two turbine compressors for supplying air for foundry cupolas, oil and gas burners for core ovens and other industrial heating equipment are shown by the Spencer Turbine Co., Hartford, Conn. The Smith-Monroe Co., South Bend, Ind., is demonstrating a compressed air separator used to remove oil and water in compressed air lines. The separated oil and water is discharged automatically by a small trap.

The Linde Air Products Co., New York, has an interesting display of welding equipment. The General Electric Co., Schenectady, N. Y., is showing a portable welding unit, several electric motors, and a special type cupola blower which recently has been placed on the market.

A multi-stage pulverizer, an impact pulverizer with an air separator and a burner for pulverized coal are exhibited by the Grindle Fuel Equipment Co., Harvey, Ill.

Fifty-Seven Shops Display Quality Castings

ONE of the most popular features of the exhibition is the display of castings, sand testing equipment, etc. in the south wing. About 200 castings are being shown by the various firms of which 26 are gray iron, 19 are steel and 12 are malleable iron foundries. Each of the castings displayed is marked with a small card giving pertinent information.

Displays in the malleable section are under the supervision of the Malleable Iron Research institute; those in the steel section under the direction of the Steel Founders' Society of America; and those in the gray iron section are displayed under the sponsorship of a committee headed by D. M. Avey, editor, The Foundry.

Winning entries in the local apprentice contests in steel and gray iron molding and pattern making are on exhibit in the south wing. These are eligible for the prizes in each class to be awarded by the American Foundrymen's association.

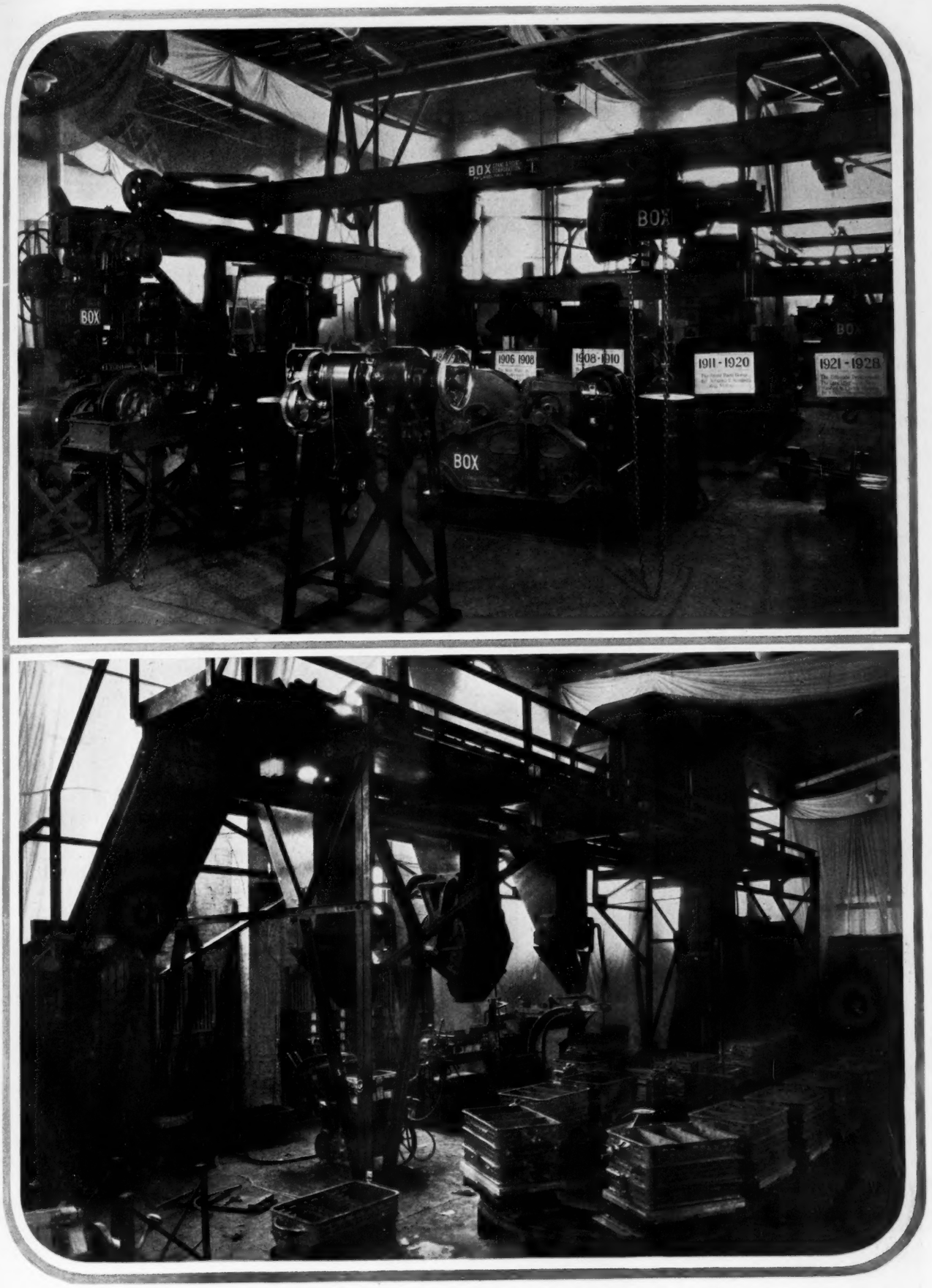
Molding sand testing equipment—both of the standard type and that developed for control work—are on display for the purpose of demonstrating to foundrymen the use of this apparatus. This exhibit is being maintained by the A. F. A. committee on molding sand research.

Operate New Equipment for Molding

REFINEMENT in existing models mark many of the molding machines and pieces of accessory equipment on display. In some, additional features have been incorporated, while in others the operating mechanism has been improved and simplified for greater speed and ease of operation. Molding machine manufacturers are represented to an unusually complete extent.

The Tabor Mfg. Co., Philadelphia, is showing several new machines including one designed for multiple molding. It is equipped with two pattern plates, one mounted directly on the jolting table and the other attached to the squeezer head above.

The Osborn Mfg. Co., Cleveland, has an unusually large display of molding machines, sand treating equipment,



PHILADELPHIA FOUNDRY SHOW RE FLECTS MECHANIZATION OF INDUSTRY

In dozens of the extensive booths in which operating exhibits are shown, the outstanding feature is the handling of work by mechanical devices which either supplant hand labor or assist in making continuous operation possible. The above illustrations show typical exhibits of overhead hoist and traveling conveyor installations.

sand and mold handling equipment in operation. Large molds are made on one machine while small molds are made on a squeezer and placed on a conveyor.

Johnson-Jennings Co., Cleveland, is exhibiting a wide range of molding machines, including a new type recently developed in which three cylinders are employed to jolt the sand, roll the mold and draw the pattern.

Beardsley & Piper Co. have an interesting exhibit of two machines in operation. One machine is equipped with motor mechanism and is mounted on a length of railroad track to demonstrate how it may be utilized over a long line of molds set up on the floor. The other machine is of the tractor type mounted on two long racks laid on the floor and designed to move forward at a speed to suit the character of the molds which are placed in rows to the rear as the machine advances over the sand heap.

Arcade Mfg. Co., Freeport, Ill., shows a number of hand-operated and power-operated molding machines including jolt squeezers, jolt strippers, and air strippers. Core machines and pouring outfits also are shown. Three types of plain squeezing machines, two types of jolt squeezer machines, one plain squeeze pattern-draw machine, also vibrators, flasks and riddles are shown by the Berkshire Mfg. Co., Cleveland. The Herman Pneumatic Machine Co., Pittsburgh, is exhibiting a few of its smaller rapid production type jolt, rollover and pattern draw machines and a new heavy type jolt machine.

International Molding Machine Co., Chicago, is exhibiting a wide variety of machines. Milwaukee Foundry Equipment Co., Milwaukee, is showing motion pictures of its machines in operation in various foundries. A large variety of molding machines is being shown and operated by Wm. H. Nicholls Co. Inc., Brooklyn, N. Y.

T. B. Wood's Sons Co., Chambersburg, Pa., is showing an aluminum taper-slip flask, a wood taper-slip flask and an automatic adjustable slip jacket, in various sizes. A line of molding equipment, consisting of snap flasks, steel jackets, core plates, etc. is being shown by the Diamond Clamp & Flask Co., Richmond, Ind.

Foundry interest in mechanical preparation and distribution of sand is evidenced by the wide range of equipment for this purpose shown by several exhibitors. The Royer Foundry & Machine Co., Wilkes Barre, Pa., is showing several models of its sand separator and blender which utilizes a rapidly moving belt. The Axmann Sand Throwing Machine Co., Cleveland, is showing many machines. Jeffrey Mfg. Co., Columbus, O., is demonstrating a sand conditioning machine employing a revolving drum with projections and a brush. The exhibit of the C. O. Bartlett & Snow Co., Cleveland, includes full size units for conditioning sand. Many portable screens and riddles are shown by the Deister Concentrator Co., Fort Wayne, Ind., Lowe Mfg. Co., Detroit, and Great Western Mfg. Co., Leavenworth, Kans.

The National Engineering Co., Chicago, has a display of its muller type mixers. A padder type core and facing sand mixer, equipped with motor and speed reducer drive, roller bearings and a hexagonal screen is shown by the Standard Sand & Machine Co., Cleveland.

The Wadsworth Core Machine & Equipment Co., Akron, O., is showing core-making machines and machines for cutting and coning cores. Pneumatic machines for blowing cores under pressure are exhibited by Wm. Demmler & Bros., Kewanee, Ill.

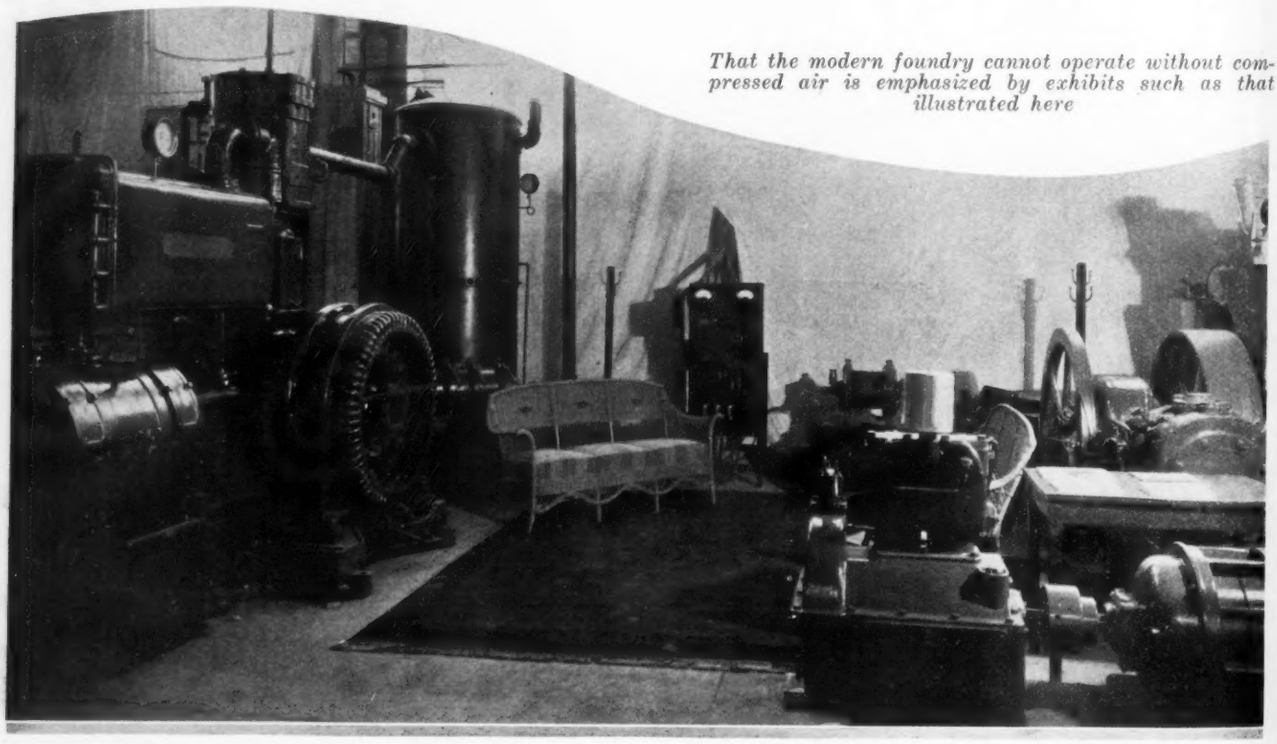
Sand control and sand testing equipment is shown at the booth of Harry W. Dietert, Detroit. A portable instrument for determining the moisture content of molding sand is displayed by R. W. McIlvaine Co, Chicago.

A complete shakeout bail, vibrators, and knockout machines, are shown by the Stoney Foundry Engineering & Equipment Co., Cleveland. An extensive line of vibrators is shown by Malleable Iron Fittings Co., Branford, Conn.

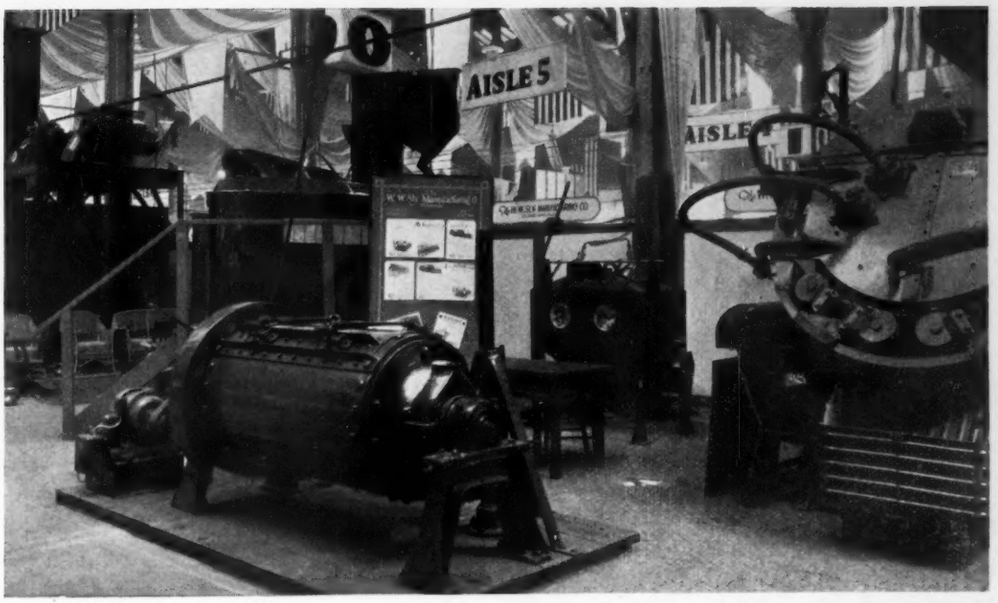
Equipment for Cleaning Shows Improvement

AS USUAL the exhibits of sand blast and cleaning room equipment are imposing.

Featuring the exhibit of the American Foundry Equipment Co., Mishawaka, Ind., are two new types of sandblast mills, 36 x 42 inches; also



That the modern foundry cannot operate without compressed air is emphasized by exhibits such as that illustrated here



New equipment for cleaning rooms, including sandblast cabinets, tumbling barrels and grinding machines—portable and stationary—this year takes a prominent place in the Philadelphia show

a new type of sand cutter, containing a screening device, and a new type of sandblast room, 8 x 8 feet with dust arrester. Other items on display include a gravity barrel, pressure-type cabinet, induction type cabinet, two core machines and equipment for straightening core rods. The Pangborn Corp., Hagerstown, Md., is demonstrating a rotary sandblast table, 18 feet in diameter, designed to clean large castings. This machine is of the direct pressure type. A direct pressure sandblast barrel with loading attachment also is shown; as well as sandblast helmet of molded rubber equipped with an atmospheric water washed air ventilating device.

The New Haven Sand Blast Co., New Haven, Conn., is exhibiting a self-contained dust arrester unit for grinding equipment, and a motor driven tumbling mill and a side draft sandblasting and a unit spark eliminator and arrester. The W. W. Sly Mfg. Co., Cleveland, has a large exhibit which features a steel molding sand reclaiming unit. Tilted sandblast mills are exhibited; a positive pressure rotary table and an 8-foot turn table cabinet. The reclaiming unit has capacity of two tons an hour. The Macleod Co., Cincinnati, is displaying several types of sandblast machines and paint sprayers. Titgen-Eastwood Co., Philadelphia is showing a line of sandblast equipment.

Many grinders of all varieties are being displayed. The United States Electrical Tool Co., Cincinnati, is exhibiting a line of floor grinders, snagging grinders, and portable grinders. Swing frame grinders and buffing machines are being demonstrated by the Marschke Mfg. Co., Indianapolis, Ind. a subsidiary of the Black & Decker Mfg. Co. The Rotor Tool Co., Cleveland, is showing a line of pneumatic tools, and as a special feature, a high production grinder specially designed for the use of rubber or bakelite bonded wheels. A line of floor stands, with narrow spreads between wheel centers, is being demonstrated by the Bridgeport Safety Emery Wheel Co., Bridgeport, Conn.

The Independent Pneumatic Tool Co., Chicago, is displaying a line of chipping and riveting hammers, air hoists, and grinders, with a new rotary type grinder and sander. The Kling Bros. Engineering Works, Chicago, is demonstrating a new high speed double end grinder, designed for speeds up to 8500 revolutions per minute. A vitrified wheel for grinding steel castings is being demonstrated by the Abrasive Co., Philadelphia. This company also is showing a new bakelite wheel for grinding steel castings and billets. Norton Co., Worcester, Mass., is exhibiting a new floor stand snagging machine, equipped with 36-inch wheels, also swing frame grinders, refractories, an abrasive floor material and special wheels. The Carborundum Co., Niagara Falls, N. Y., is displaying a new type of internal grinding wheel, a line of snagging wheels, a small core oven and two models of refractory furnaces.

Many Companies Exhibit Foundry Supplies

WHILE equipment dominates the show, the importance of supplies is attested by the number of exhibits of materials, accessories, etc., necessary in the operation of foundries. Exhibits of firms dealing in foundry supplies include Frederic B. Stevens Inc., Detroit; J. S. McCormick Co., Pittsburgh; S. Obermayer Co., Chicago; Pennsylvania Foundry Supply Co., Philadelphia, and the Hill & Griffith Co., Cincinnati.

The importance of the various types of sands in the foundry industry is illustrated well by the large number of companies displaying molding sands

One of the features of the exhibition is the large variety of core binders that are displayed by a number of companies. These binders include linseed oil, glutrin, flour, etc.

Many types of refractories in a variety of shapes and forms are shown by a number of companies.

Castings made from a natural pig iron containing nickel and chromium are featured at the exhibit of the Bethlehem Steel Co., Bethlehem, Pa. Specimens of the different grades of foundry pig iron manufactured by the firm also are shown. The application of nickel to gray iron castings is shown in the exhibit of the International Nickel Co., New York. The exhibit is composed of a number of representative nickel-gray iron castings for various purposes.

Pig iron, coke, ferromanganese, ferrosilicon, molding sands, aluminum and other materials for foundry use are displayed by Rogers Brown & Crocker Bros. Inc., New York. Foundry coke and foundry pig iron feature the exhibit of the Debevoise-Anderson Co., New York. A cupola flux for refining and desulphurizing cast iron and a group of castings to show the effect of this flux are shown by the Mathieson Alkali Works Inc., New York. Specimens of foundry coke in various sizes are displayed by the Semet-Solvay Co., New York.

Editorials

Quick Scrap Turnover Hits Pig Iron — *Brass Pipe Campaign Proves Worth*
Speedy Annealing Rounds Out Cycle — *British Turning to Truck Delivery*
Utilities Quadruple Coal Efficiency

More Steel from Less Pig Iron

PRODUCTION of steel ingots has been increasing month by month until April saw a record for all time. Pig iron, on the other hand, while it has been making monthly gains, has ranged lower than for corresponding months in three preceding years. The fact is that mills are producing steel at the highest rate ever seen, while pig iron production is far from its peak. The discrepancy is made up by the enlarged use of scrap, apparently because the latter is increasingly plentiful and therefore cheap.

It has been suggested that one reason for increased supplies of scrap in recent years is the larger use than formerly of iron and steel in products with shorter life. This means the automobile. When steel is used in railroad rails, bridges, as structurals in buildings and in various other ways, its life before becoming scrap is much longer than when it goes into an automobile or motor truck.

Thus a shorter cycle is in process of being developed in one of the main outlets for steel and iron and the discarded material is being returned more rapidly than heretofore. Estimates of 2,000,000 cars dismantled and scrapped each year indicate a large tonnage returning quickly for remelting. With increasing number of automotive vehicles, this factor is growing each year and adding to the surplus of scrap.

Since a smaller proportion of pig iron is needed for production of steel it follows that less iron ore is needed per ton of steel, without taking into account the use of scrap in the blast furnace, which in recent months has been large.

Co-operation, Publicity Win Again

IN LIQUIDATING their inheritances from the war copper producers and brass mills were quick to apprehend that their situations had much in common and, to an extent, were sequential. The copper producers had their mines keyed up on an economical basis but a major outlet for clogged because the brass mills lacked a broad their new metal and their large stocks was market for their finished products.

It was logical that treatment of their problems be administered jointly by these interdependent interests. The resulting studies and surveys revealed the possibilities, among other things, of promoting wider use of brass pipe for plumbing. The requirements of the public were ascertained and production geared up accordingly. Demand was stimulated by publicity directed at builders, architects and prospective home owners, and warehouses set up at convenient points to meet this demand. In the latter gesture was a confidence that betokened success. Other bar mill products also have been pushed.

It need only be said to indicate the merit of the program that in 1927 nearly 32,000 tons of brass pipe for various plumbing purposes was sold. This was an increase of 23,000 tons over 1922. Co-operation and publicity were again proved to be felicitous companions.

Continuous Annealing a Forward Step

NOT so long ago steel undergoing fabrication was heat treated in furnaces of the intermittent type. The stock was charged into and withdrawn from the heating chamber through the same door. But recently in many industries this situation has taken on a different complex. Volume output has emphasized the need of continuous processes and today, particularly in the automobile industry, continuous heating equipment is employed for annealing, normalizing, carburizing and hardening. The continuous principle has conserved floor space and effected a saving in labor and fuel.

Continuous furnaces in the steel industry are not confined to the heating of semifinished materials such as billets, slabs and sheet bars. Tin plate is being annealed continuously and successfully at some plants because this product lends itself readily to this process by reason of uniform specifications as to texture. Sheet steel at some

plants is being annealed continuously in boxes but because of the variety of finishes and physical qualities demanded by consumers, this practice has not gained much headway. Makers of continuous normalizing furnaces have eliminated many faults in design and while some work in this direction still remains to be done, the number of furnaces employed for this purpose gradually is increasing.

Annealing bears a close relationship to mill output. Decrease the time of the anneal and the way is opened for an increase in production schedules. An important advantage to be gained by continuous annealing is that it permits the metallurgical department to work out a definite heating cycle, thus insuring greater accuracy in freeing the grain structure of strains and in obtaining the desired deep drawing and maximum tensile properties. Development of continuous furnaces as applied to annealing operations is looked upon with flavor by the steel industry of the United States.

Freight Still Handicaps British

FOR about two years following the armistice, when agitation for reduced railroad freight rates was rampant, much was heard concerning the high cost of assembling the raw materials for the production of iron and steel, but subsequently the increased competition among producers in selling has become the paramount market factor. In Great Britain, however, high transportation costs continue consequential, and strangely so considering the short hauls there and the thousand miles or more that Lake Superior iron ore, for example, traverses between mine and stack.

In a recent address E. J. Fox, new president of the National Federation of Iron and Steel Manufacturers, declared that "railway charges on crude basic materials are far too high to enable our industries to take full advantage of the blessing of cheap raw materials. When I tell you that in my district in the industrial Midlands, where pig iron is made from local minerals and delivered to consumers all within a radius of 50 to 60 miles, over one-third of the cost of the pig iron to the consumer is paid directly for railway carriage, you will appreciate how greatly we are handicapping ourselves."

Already, said Mr. Fox, his company is "delivering the crudest of materials by road and has under contemplation extension of this service for delivering pig iron from furnace to consumers." In some parts of New England pig iron is now being delivered by truck, but nowhere else are distances consistently short enough to warrant truck haulage at this time. But on a larger scale the water transportation of Buffalo and Cleveland iron to Chicago, the Great Lakes traffic in scrap, the barging of pig iron and reinforcing bars from Buffalo to New York, are manifestations of this resort to other and cheaper modes of transportation.

Coal Economy Leads Water Power

DEVELOPMENT of water power in the United States increased 5 per cent in 1927, according to the federal geological survey. Total potential water power available 50 per cent of the time or more is estimated at about eight times that already in service. Possibilities of further development thus are large.

The survey finds that all the increase in 1927 was by public utilities corporations, industrial water wheels showing a decrease. California, New York and Washington are the leading states in utilization of their great latent waterpower resources.

Reclaiming power from natural sources is an important factor in the development of the country. But better efficiency in production and use of steam generated by combustion of coal has given even greater results, with promise of further refinement. One of the largest public utilities in the country has made a remarkable gain in this respect. It now generates about four times as much power from a pound of coal as it did in 1903. At that date the average of its several plants was seven pounds of coal per kilowatt-hour, with its most efficient plants using 4½ pounds per kilowatt-hour. At present its average consumption of coal in all plants is 1.67 pounds of coal per kilowatt-hour, with its most efficient stations using 1.13 pounds and 1.37 pounds per kilowatt-hour.

These gains have been obtained by use of the turbine engine, stokers, powdered coal, better generating machinery and other refinements. As a result of such economies the tremendous increase in power requirements has been accompanied by a much smaller increase in fuel consumption, releasing much power, transportation effort and labor for other productive purposes and at the same time conserving valuable coal resources.

Perhaps advances in use of coal and steam may continue and afford a much larger economy in the long run than the development of water power. What has been done by one public utility interest can be done in corresponding degee by smaller units if similar methods are applied and the present tendency to large units and centralization is bringing this about in increasing degree.

The Readers' Round Table

Discusses A. B. C.'s of Corrosion Resisting Steels

To the Editor:

I HAVE noted F. R. Palmer's article on the "A. B. C.'s of Corrosion Resisting Steels" in IRON TRADE REVIEW with much interest. Whether limitations of space are accountable for some of the statements Mr. Palmer makes is not known, but in all events I feel that attention should be called to some of these which, if not erroneous, are at least misleading.

In the first place, Mr. Palmer makes no distinction between the stainless iron with low carbon content and the stainless steels with relatively high carbon, when he generalizes analyses in classes "A" and "B" by putting carbon less than 0.4 per cent. Within this range of carbon, widely differing physical properties will be obtained in stainless alloys, the same as in any alloy steel. For instance, the statement is made under the heading of "toughness," for Class "A" material, that it is "structurally dependable, not brittle in sharp notched specimens or under impact." Within the given carbon range, we find variations in the Izod value from a maximum of 30 feet pounds for materials with 0.37 per cent carbon, to a maximum of 120 feet pounds for 0.10 per cent carbon, with the same chromium. These values are widely different and might lead to possible disaster if material of the wrong carbon content were specified.

Similarly, the hot working qualities of material will also vary with carbon content, the higher carbon alloys being quite hard to work, particularly to pierce in the form of tubes and to roll into sheets. Consequently, the statement "readily forged, pierced or rolled" does not conform to facts.

As regards material of Mr. Palmer's Class "B," the same applies, since the carbon content affects the properties very markedly. There are virtually no commercial alloys of this chromium content with carbon in the neighborhood of 0.40 per cent. Practically all commercial alloys of this class are produced with carbon under 0.12 per cent or even lower.

Under the heading "Grain Growth," we find the statement that simple chromium irons or those containing high silicon or aluminum are subject to dangerous grain growth and become very brittle. Inasmuch as the limits defining dangerous silicon or aluminum content are not mentioned, this statement does not carry much weight. Many steels are subject to grain growth at high temperatures and will become brittle if heated excessively, and the condemnation of stainless alloys of this composition is as true for many other varieties of steel.

Furthermore, since the 16 per cent chromium alloys with low carbon can be worked without difficulty at moderate temperatures, there should be no hesitation in using them for whatever purpose they appear suitable. It is merely necessary to avoid heating to excessive temperature for the particular composition.

It is true that grain growth is held down by increased carbon and nickel content. The use of copper and manganese is questionable in this respect. On the other hand, copper is probably advantageous as regards corrosion resistance when present in small percentages. Manganese is always undesirable in corrosion resisting alloys. One per cent neutralizes the effect of some 9 per cent of chromium.

As regards working qualities for cold forming, deep drawing, etc., 16 per cent stainless irons are superior to 14 per cent stainless irons of equal carbon content.

Under the heading "Riveting" the statement is made that this composition, namely 16 per cent chromium, "due to the low impact values, not desirable for either hot or cold rivets." This is incorrect. The original Du Pont nitric acid plant at Gibbstown, N. J., contains nearly ten tons of rivets made from an alloy with approximately 17 per cent chromium, 0.85 per cent silicon, 0.10 per cent carbon. Once the proper procedure for riveting was ascertained, no difficulty whatever was experienced in driving rivets nor in keeping them in place after they were once driven. This plant has been in operation for over a year and is entirely satisfactory. These rivets were made with both hot and cold upset heads and driven both hot and cold. For this particular analysis, rivets should not be heated in excess of 1500 degrees Fahr., while for the 14 per cent stainless iron, 1450 degrees Fahr. is the upper limit of temperature. As regards resistance to scaling, the Class "B" alloys may be used successfully at temperatures running 100 to 150 degrees higher than those of Class "A" with equal carbon content.

The question of strength at elevated temperatures is most important for it determines the stability and safety of various structures and apparatus. To depend upon data obtained by short time tests is hazardous, and information derived from long time tests is as yet very incomplete. So far, indications are that Class "C," namely, the nickel chromium combination, is the best material for use in high temperature installations. Class "B" material, with low carbon, appears to have a blue brittle range at 750 to 1000 degrees Fahr., but under this range, and above it up to about 1300 degrees Fahr., this analysis appears reasonably safe. Class "A" also appears safe, but so far very few results of long time tests have been published.

W. M. MITCHELL, *Assistant Sales Manager, Development Division, Central Alloy Steel Corp. Massillon, O.*, April 5, 1928.

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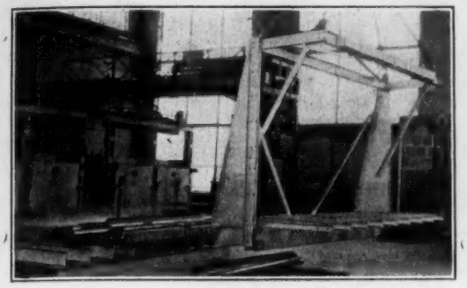
E. L. SHANER, Editor. *J. D. PEASE, Advertising Director.* *F. F. LIGHT, Circulation Manager.*



Heat Treating Miscellaneous Steel Castings. Page 1269.

IN ACCORDANCE with its usual custom, followed for many years, IRON TRADE REVIEW herewith publishes an extensive description of the exhibition of foundry equipment and supplies now being held by the American Foundrymen's association at the Commercial museum in Philadelphia. The article begins on page 1285. Readers will appreciate the speed and accuracy necessary in reports of this kind when it is realized that Monday was the opening day in Philadelphia, while this issue of IRON TRADE REVIEW is in the mails early Wednesday and on the reader's desk Thursday.

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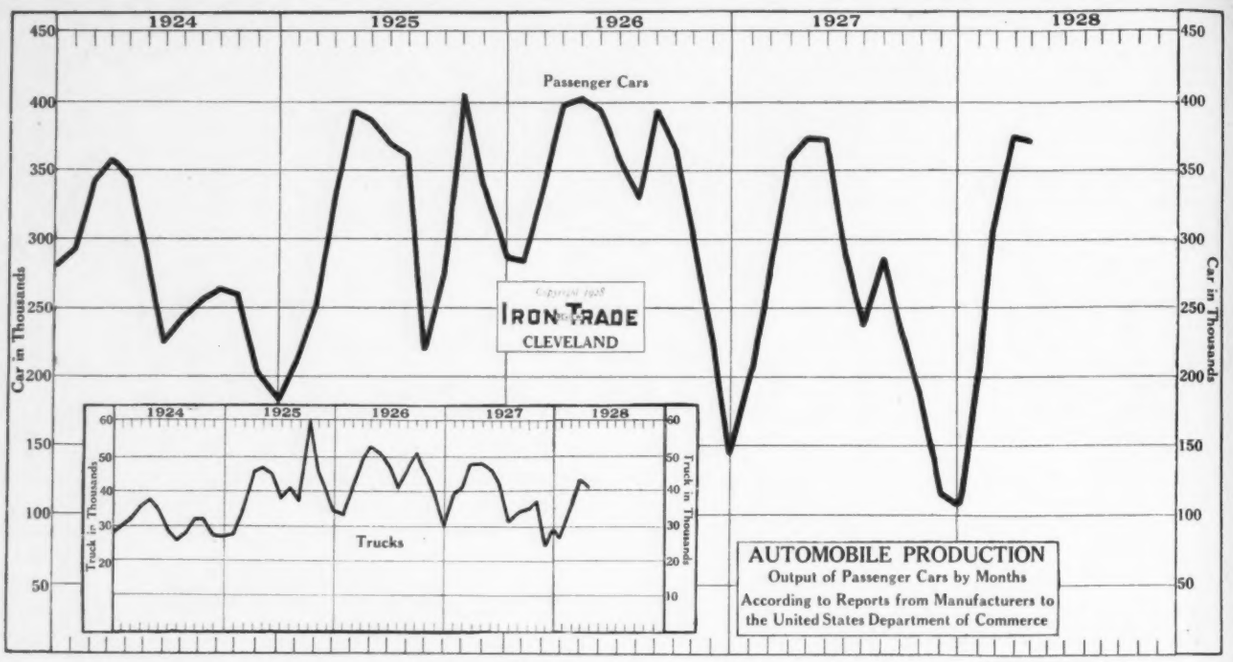
The Business Trend



Motor Car Situation Nearly Balanced

BY JOHN W. HILL, Financial Editor

WITH the progress of the year the automobile industry is developing into an interesting situation. April production of cars and trucks produced by the National Automobile Chamber of Commerce totaled 369,854 against 402,434 in March and 342,820 in April, 1927. This association does not include Ford.

FORD'S output for the month is roughly estimated at approximately 45,000 cars and trucks. This compares with about 12,000 in March. In other words it is evident that Ford production is going ahead by leaps. It is expected to be at 5000 daily or almost 90,000 monthly by July. On the other hand the output of other companies is beginning to taper.

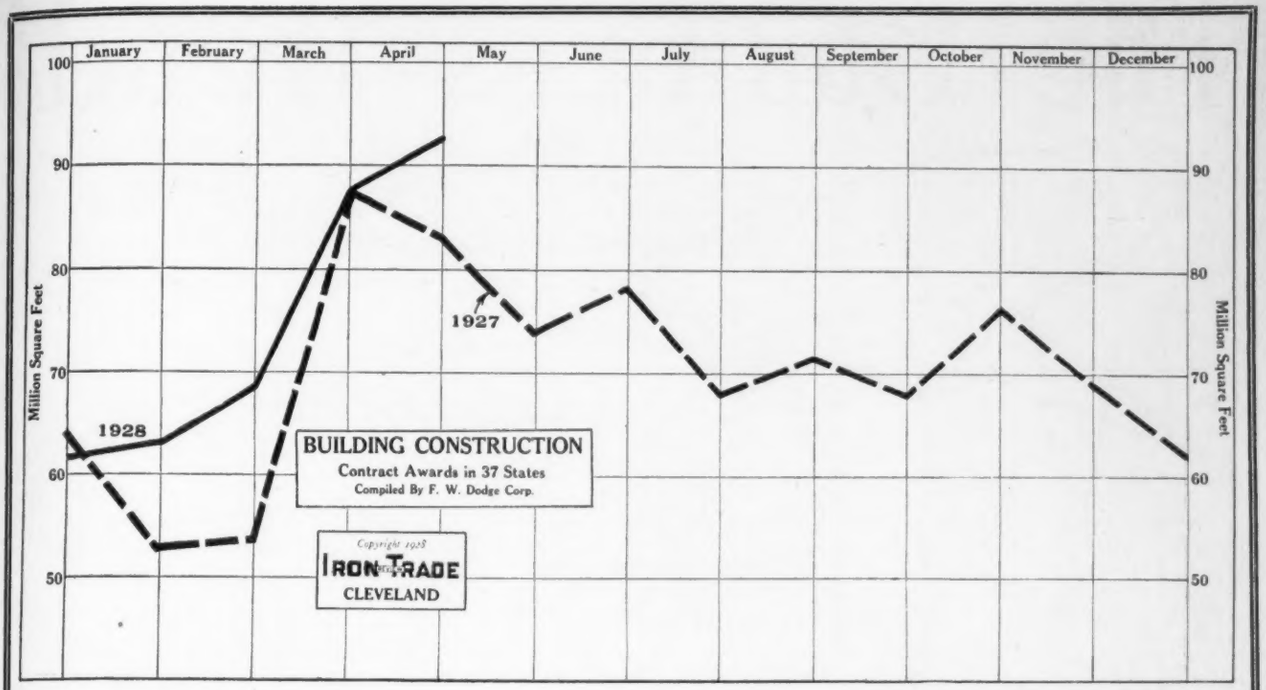
THIS is not an unexpected development. Ford's temporary absence from the market has amounted to a windfall for some other makes of cars. At the beginning of 1928 there was a pent-up demand for automobiles and with Ford output still delayed, other companies have rushed production for the spring trade. For some, demand was fully up to expectations; for a few others it has fallen short. For all, the rising tide of Ford output is removing whatever advantage there was in his absence from the market.

THE small downturn in production in April reflects conditions that are affecting other producers. It is probable that seasoned influences will bring some further recession in production for certain producers. But Ford schedules are set for far higher levels, and this rise will tend to offset declines in any other quarters. The result is that the automobile industry as reflected by output totals is likely to continue vigorous for some months to come.

MEANWHILE, high records of activity are being made by other industries. In the iron and steel industry April brought a new peak for all time, and the same is true of building construction. Active building and high levels of automobile production have contributed to the stimulation of iron and steel production. At the present time the iron and steel trade appears on steadier legs than at this time last year, when a rather marked decline was beginning to get under way.

THE building industry has brought new surprises in the great record of April contract awards. The most impressive phase of the building exhibit is found in the large total for industrial construction.

The Business Trend

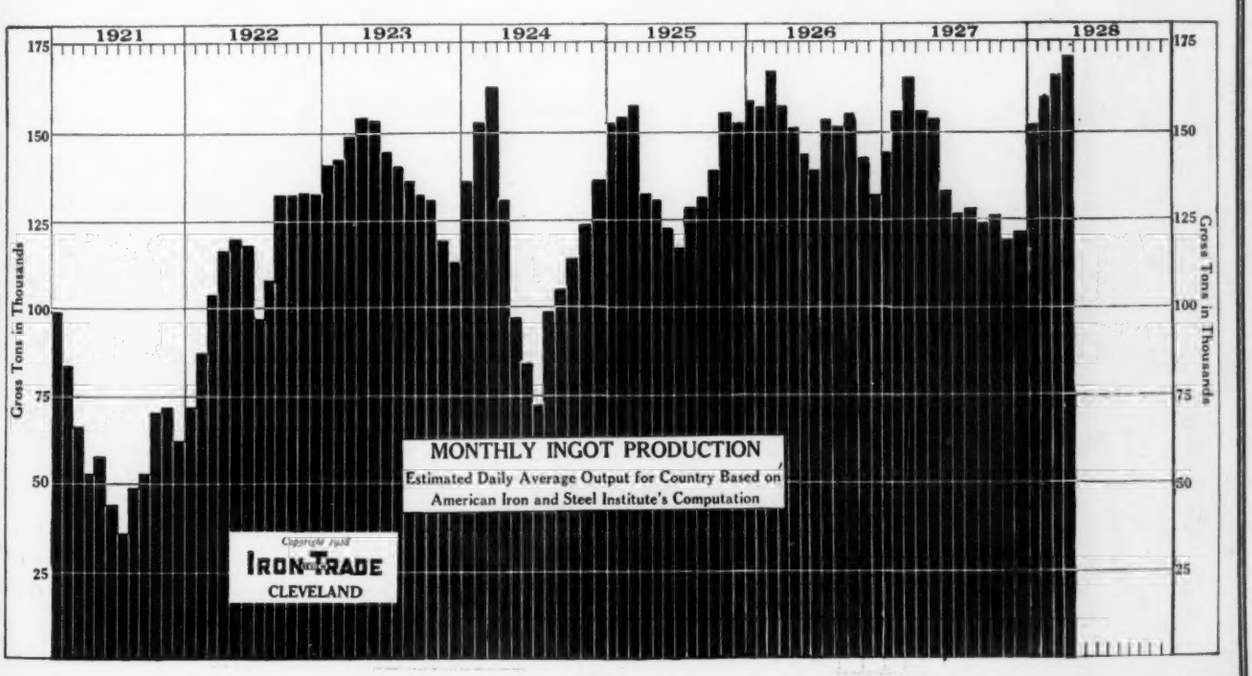


Building Construction

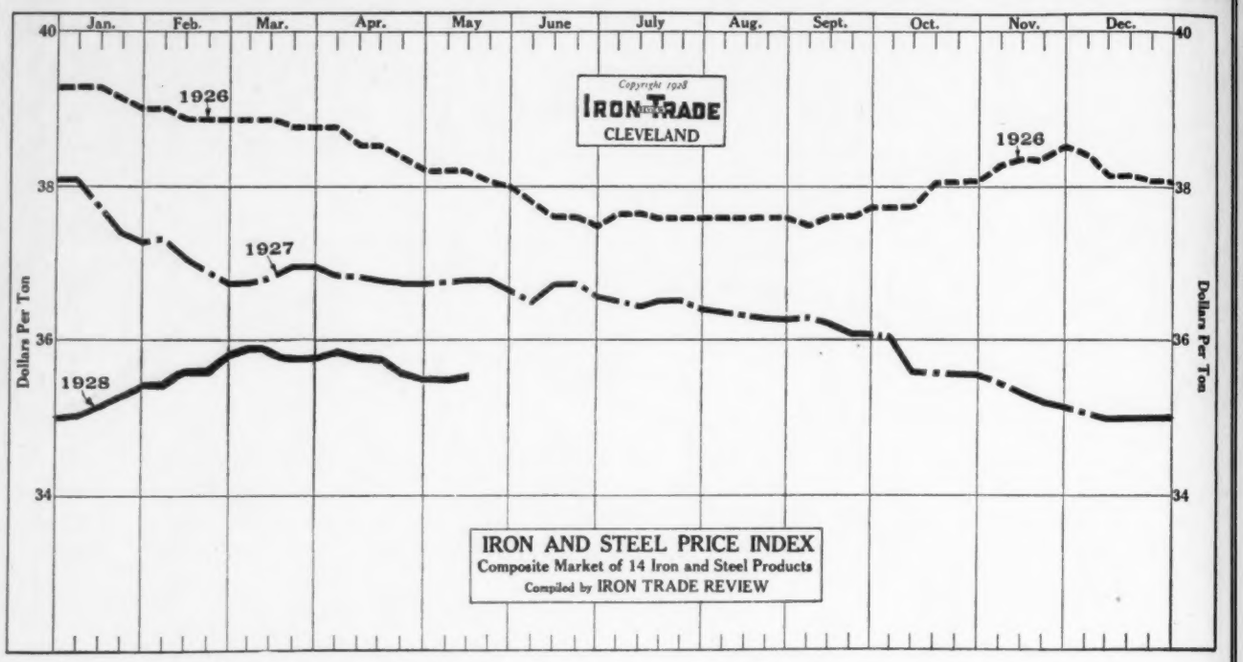
BUILDING construction in April reached a new total for all time. Aggregate contract awards in 37 states as reported by the F. W. Dodge Corp. stood at 94,480,500 square feet. This compared with 88,090,000 square feet in March and with 87,891,000 square feet in April, 1927. The gain over one year ago was 8 per cent and that over the preceding month was 7 per cent. The most striking increase was for industrial buildings standing at 11,050,000 square feet, a gain of 72 per cent.

Ingot Production

PRODUCTION of ingots in April reached a new high daily average rate. The figure was 172,103 tons compared with 166,945 tons in March and the previous high record of 167,973 tons in March, 1927. Only four times since 1917 have April daily rates been greater than the preceding March. In 1927 April ingot daily production declined by more than 5 per cent from March compared with a gain of 3 per cent this year. Because of the fewer days than in March April output showed a small decline.



The Business Trend

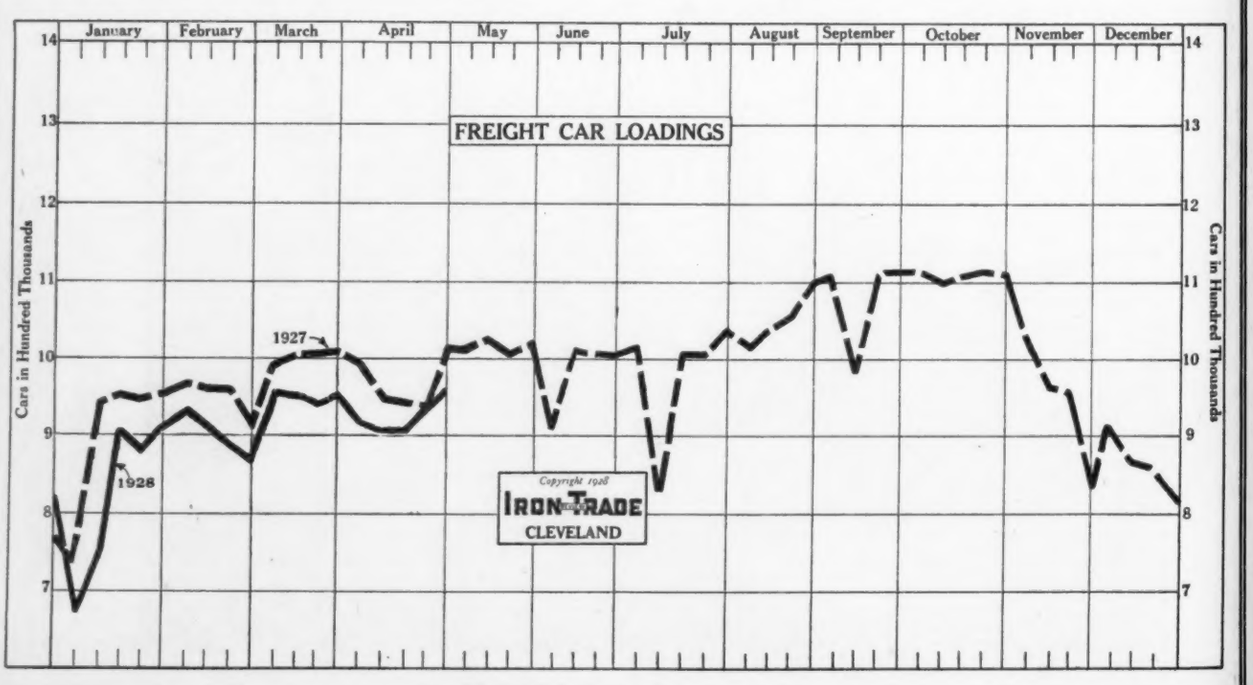


Steel Price Index

LITTLE change has appeared in the iron and steel price structure. In the period ended May 5 the IRON TRADE REVIEW composite market index for 14 leading iron and steel products was $35.57 a ton compared with $35.56 a ton in the preceding week. This is a lower level than the $35.67 ton average for April. One year ago the price level of the composite was $36.76 a ton. Price weakness in the industry continues one of the most unfavorable factors, despite some little show of strength early this year.

Freight Car Loadings

DURING the week ended April 28 car loadings of revenue freight in the United States totaled 961,000. This was an increase over the total of 944,694 in the preceding week, but it stood 59,000 cars less than for the corresponding week one year ago. The major part of this decrease from last year was accounted for by the slump in ore shipments which were 35,000 cars less than in the corresponding week one year ago. This is partly due to the late opening of the ore shipping season.



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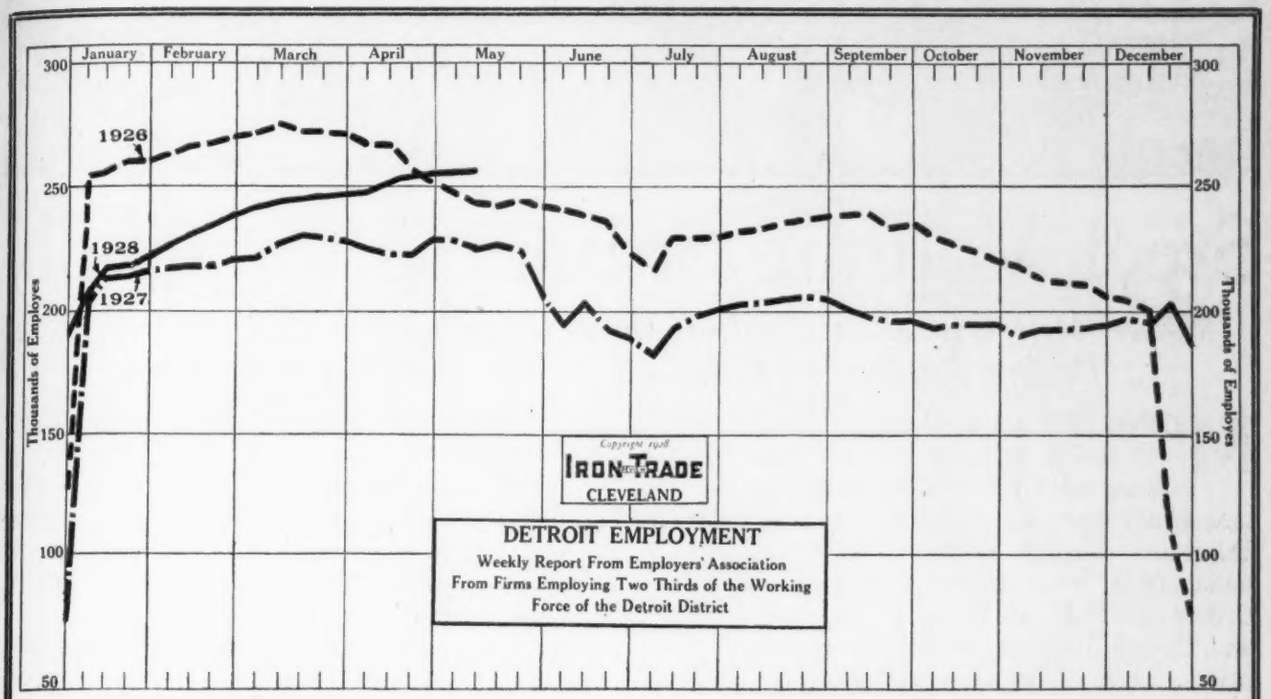
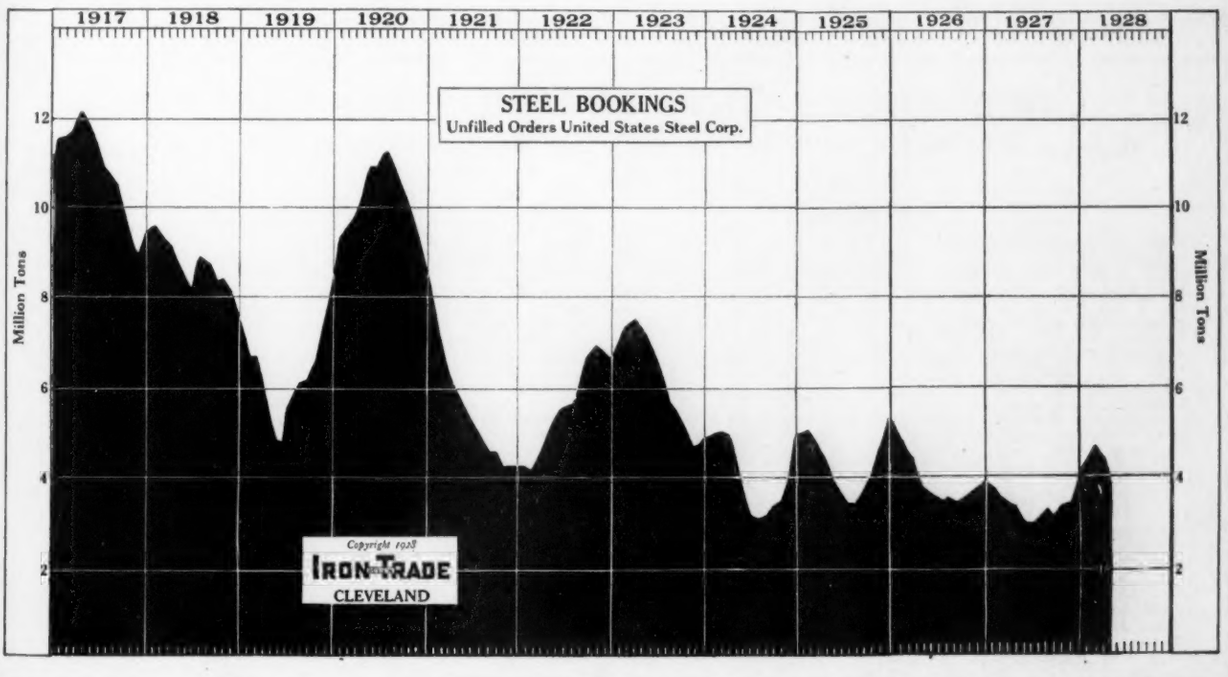


Detroit Employment

FOR the first time this year employment in the Detroit district in May is exceeding that of the corresponding period of 1926. For the seven day period ended May 8 employment in the automobile center stood at 253,835 an increase of 445 over the preceding week and of 28,477 over the corresponding week one year ago. Employment in that district now stands more than 8000 greater than it did two years ago. This increase of employment reflects the improvement chiefly in production of Fords.

Steel Bookings

UNFILLED orders of the United States Steel Corp. declined 463,073 tons in April. At the close of last month orders stood at 3,872,133 tons, compared with 4,335,206 tons one month before, 3,456,132 tons one year ago, and 3,867,976 tons on April 30, 1926. The decrease in orders reflects the record rate of output of steel in April. Despite the drop in April orders on the books of the corporation remain at a higher level than any month in 1927 with the exception of December.



Steel Volume Subsiding Gradually

Slower Mill Operations Reflect More Conservative Buying—Unfilled Orders Decline 10.7 Per Cent—Pig Iron Prices Easier

MOMENTUM acquired during the first quarter still is carrying iron and steel demand along on a fairly high plane, but the volume of new business is easing off gradually. While shipments continue heavy, a slight recession is noted from week to week in mill operations. Orders are not as large as in recent weeks, and though there is no definite change in steel prices, the easy tendency persists.

Foundry Pig Iron Prices Are Lower

Valley foundry iron has reached a new low level on the present movement, with small-lot sales at $17, base, or 25 cents under the recent minimum. Chicago furnaces have reduced foundry and malleable 50 cents to $18. A large tonnage of malleable for delivery over the second half to a Muncie, Ind., melter, is reported to have been placed with a Cleveland maker at $16, base, furnace, or 50 cents under the recent minimum. Reports of Alabama iron being offered at $15.50, base, Birmingham, do not appear to be substantiated, as only one car was sold in the Chicago market, under distress circumstances, at that price, and small-lot orders continue to command $16. A Cleveland furnace during the week booked over 50,000 tons for second half delivery, in preparation for relighting another stack. Production of beehive furnace coke has been reduced to contract requirements, steadying the market, while standard foundry grades are being offered at $3.50, or ten cents less than a week ago.

Further evidence of high steel production last month, as well as the more conservative attitude of buyers, is noted in the sharp decline of 463,073 tons, or 10.7 per cent, in unfilled orders of the United States Steel Corp., during April. The total on books at the close of the month was 3,872,133 tons, compared with 4,335,206 tons on March 31.

Corporation Operations at 89 Per Cent

Steel ingot production in the Pittsburgh district is maintained on a basis of 80 per cent, a considerable portion of the output going into stock in anticipation of lower output during hot weather. A slight recession is reported in steelworks operations in the Mahoning valley and in the Chicago district, although in the latter they still are close to 95 per cent. Steel corporation

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	May 16, 1928	Apr. 1928	Feb. 1928	May 1927
PIG IRON				
Bessemer, del. Pittsburgh	$19.26	19.26	19.26	20.86
Basic, valley	16.25	16.75	17.00	18.10
Basic, eastern, del. eastern Pa.	19.10	19.25	19.50	20.75
*No. 2 foundry, del., Pittsburgh	18.76	19.01	19.01	20.26
No. 2 foundry, Chicago	18.50	18.50	18.50	20.00
*Southern No. 2 Birmingham	16.00	16.00	16.00	18.00
*Southern Ohio, No. 2 Ironton	19.00	19.00	19.00	20.00
**No. 2X, Virginia furnace	20.50	20.50	20.50	22.00
**No. 2X, eastern, del. Phila.	21.26	21.26	20.91	22.26
Malleable valley	17.25	17.25	17.25	18.50
Malleable, Chicago	18.50	18.50	18.50	20.00
Lake Superior charcoal del. Chicago	27.04	27.04	27.04	27.04
Gray forge, val., del. Pittsburgh	18.76	18.56	18.51	19.76
Ferromanganese, del. Pittsburgh	109.79	104.79	104.79	99.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	2.50	2.60	2.65	2.80
Connellsville, foundry ovens	3.50	3.65	3.75	3.80
SEMIFINISHED MATERIAL				
Sheet bars open-hearth, Youngstown	32.50	32.75	34.00	34.00
Sheet, bars, open-hearth, Pittsburgh	34.00	34.00	34.00	33.75
Billets, open-hearth, Pittsburgh	33.00	33.00	33.00	33.00
Wire rods, Pittsburgh	44.00	44.00	43.50	42.00

	May 16, 1928	Apr. 1928	Feb. 1928	May 1927
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.85	1.85	1.85	1.85
Steel bars, Chicago	2.00	2.00	1.95	2.00
Steel bars, Philadelphia	2.17	2.17	2.17	2.17
Iron bars, Chicago	2.00	2.00	1.95	2.00
Shapes, Pittsburgh	1.85	1.85	1.85	1.85
Shapes, Philadelphia	2.07	2.08	2.08	2.07
Shapes, Chicago	2.00	2.00	1.95	2.00
Tank plates, Pittsburgh	1.85	1.85	1.85	1.85
Tank plates, Philadelphia	2.10	2.10	2.10	2.17
Tank plates, Chicago	2.00	2.00	1.95	2.00
Sheets, black, No. 24, Pittsburgh	2.75	2.75	2.85	2.90
Sheets, blue anl., No. 10, Pittsburgh	2.00	2.05	2.10	2.25
Sheets, gal., No. 24, Pittsburgh	3.65	3.65	3.65	3.80
Sheets, black, No. 24, Chicago	2.85	3.05	3.05	3.10
Sheets, blue anl., No. 10, Chicago	2.25	2.25	2.25	2.40
Sheets, galvanized, No. 24, Chicago	3.80	3.90	3.90	3.95
Plain wire, Pittsburgh	2.50	2.50	2.45	2.40
Wire nails, Pittsburgh	2.60	2.60	2.60	2.55
Tin plate, per base box, Pittsburgh	5.25	5.25	5.25	5.50
SCRAP				
Heavy melting steel, Pittsburgh	15.00	14.85	15.05	15.50
Heavy melting steel, eastern Pa.	13.75	13.75	14.00	14.45
Heavy melting steel, Chicago	13.00	12.75	12.55	12.35
No. 1 wrought, eastern Pa.	15.25	15.25	15.25	16.75
No. 1 wrought, Chicago	13.15	12.45	12.40	12.75
Rails for rolling, Chicago	14.00	14.00	15.00	15.10

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

STEEL PLATES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.10c to 2.15c
New York, del.	2.175c to 2.225c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland	2.04c to 2.09c
Buffalo	2.00c
Coatesville, Sparrows Point	2.00c to 2.05c
Birmingham	2.05c
Pacific coast, c.i.f.	2.25c to 2.30c

STRUCTURAL SHAPES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.07c to 2.18c
New York, del.	2.14c to 2.19c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland, del.	2.04c to 2.09c
Buffalo	2.00c
Bethlehem	1.95c to 2.00c
Birmingham	2.05c
Pacific coast, c.i.f.	2.35c

BARS

SOFT STEEL

Pittsburgh	1.85c to 1.90c
Chicago	2.00c
Birmingham	2.05c
Buffalo	2.00c
San Francisco	2.35c
Cleveland mill	1.85c to 1.90c
Cleveland delivered	1.87½c and 2.09c
Philadelphia, delivered	2.17c
New York, delivered	2.19c
Boston, delivered	2.265c to 2.415c
Pittsburgh, cold finishing	2.00c to 2.05c
Pittsburgh, forging quality	2.10c to 2.15c

RAIL STEEL

Chicago	1.85c
Eastern mills	1.75c

IRON

Chicago	2.00c
New York, delivered	2.14c to 2.24c
Philadelphia, delivered	2.12c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet	1.85c to 1.90c
Chicago, billet	2.15c to 2.65c
Chicago, rail steel	1.85c to 1.95c
Youngstown, billet	1.90c to 2.00c

COLD FINISHED STEEL

Cold finished steel bars, drawn or rolled, Pitts., Chi., c.l.	2.20c
Shafting (turned, polished) Pittsburgh	2.20c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c
Cold finished steel bars, Cleve.	2.25c

TIN AND TERNE PLATE

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.25
Gary, Ind., base 10 cents higher.	
Long ternes, primes, No. 24	4.10c

*Price subject to quantity differentials.

SHEETS

SHEET MILL BLACK

No. 24, Pittsburgh base	2.70c to 2.85c
No. 24, Philadelphia delivered	2.97c to 3.07c
No. 24, Gary, Indiana Harbor,	2.80c
No. 24, Chicago, delivered	2.85c
No. 24, Birmingham, base	3.05c

TIN MILL BLACK

No. 28, Pittsburgh, base	2.90c
No. 28, Gary, base	3.00c

GALVANIZED

No. 24, Pittsburgh, base	3.60c to 3.75c
No. 24, Philadelphia, delivered	3.87c to 3.97c
No. 24, Gary, Indiana Harbor	3.75c
No. 24, Chicago, delivered	3.80c
No. 24, Birmingham, base	3.90c

BLUE ANNEALED

No. 10, Pittsburgh base*	1.95c to 2.10c
No. 10, Philadelphia, delivered	2.32c to 2.42c
No. 10, Gary, Indiana Harbor	2.20c
No. 10, Chicago, delivered	2.25c
No. 10 Birmingham, base	2.15c to 2.20c

*Plus 10 cents for 40 inches or wider.

AUTOMOBILE

No. 20, Pittsburgh base	4.00c

IRON

No. 10, Pitts., blue ann., c.l.	2.80c
No. 24, Pitts., box annealed, 1-pass cold roller, carload	3.75c
No. 24, Pitts., gal., c.l.	4.85c

(Turn to the following page)

operations average 89 per cent, compared with 90 per cent a week ago.

Eastern steel mills are competing for plates and shapes in the Chicago district, but so far without any pronounced effect on local prices.

Practically all consuming lines are taking normal tonnages of sheets, and shipments to the automotive industry have been augmented by recent attractive specifications from General Motors units and the Ford Motor Co. Sheet sales, production and shipments receded in April, after the notable improvement made during March. April sales of 284,070 tons were 115,371 tons below those of March. April production of 327,909 tons was only about 10,000 tons below the monthly average for the first quarter, while shipments of 302,759 tons were approximately 10,000 tons above the monthly average for first quarter. Strip steel shipments so far in May are exceeding the April rate rate by about 25 per cent.

Ask More for Third Quarter Sheet Bars

A stronger tendency is noted in the market for sheet bars, one or two of the valley producers announcing an advance of $1 to $34 for third quarter, although buyers are not displaying much interest and other producers quote $33.

New York and Chicago structural steel markets reflect increasing activity. Pending business at Chicago exceeds 100,000 tons. Demand at New York is featured by 16,000 tons for a warehouse and 6000 tons for a Western Union Telegraph Co. building. Awards include 3500 tons for a Missouri Pacific railroad bridge at Little Rock, Ark. Some increase is indicated for third quarter contracting in plain material prices, 1.90c, Pittsburgh, being the probable level. Eastern makers have entered Chicago territory at 1.95c, Chicago, in competition with 2.00c by local producers for small lots. A dock project at Brooklyn, N. Y., requires 3500 tons of concrete bars while in Chicago new building enterprises call for 10,000 tons of rail reinforcing bars.

The Erie railroad has placed an order for 35 locomotives with the Baldwin Locomotive Works.

Ferromanganese Advanced $5 for Last Half

Withdrawal of the $100, duty paid, tidewater, price on ferromanganese by one of the leading domestic interests, has been followed by all other factors in the trade and the price generally now is $105 on new business. Substantial tonnages have been placed under contract for second half at $105.

The market for cotton ties has been opened for the season, with makers using a different method of quoting, based on quantities. Mill shipments in carloads, delivered Atlantic and gulf ports, are $1.27 per 45-pound bundle. When 2000 bundles are purchased the price is reduced by 2 cents to $1.25, and on larger quanties the price is $1.23.

IRON TRADE REVIEW'S composite of fourteen leading iron and steel products dropped 4 cents this week, now being $35.53, due to lower pig iron prices.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (May 16, 1928)	$35.53
Last week (May 9, 1928)	35.57
One month ago (April, 1928)	35.67
Three months ago (February, 1928)	35.62
One year ago (May, 1927)	36.76
Ten years ago (May, 1918)	56.59
Fifteen years ago (May, 1913)	27.34

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED
SEE ALSO PRECEDING PAGE

HOOPS, BANDS, STRIP

Hot strip, under 3-inch, Pitts.	2.15c to 2.40c
Hot strip, 3 to 6-inch, Pitts.	2.00c to 2.10c
Hot strip, 6 to 12-inch, Pitts.	1.85c to 2.00c
Hot rolled strip, 12 to 24-inch 16 gage and heavier, coils or cut lengths, 1.85c plate basis, or 2.00c blue annealed basis.	
Hot strip, under 3-in., Chi.	2.30c
Hot strip, 3 to 6-in., Chi.	2.20c
Hot strip, 6 to 12-in., Chi.	2.00c
Hot strip, 12 to 24 in., Chi.	2.10c
blue annealed sheet basis.	
Cold rolled strip, hard coils, 1½ inches and wider by 0.100-inch and heavier base, Pitts., Cleve., (over 3 tons)	2.75c to 2.90c
Pitts., Cleve., (1-3 tons)	3.00c to 3.15c
Worcester, Mass.	3.05c

ALLOY STEEL

Hot Rolled

F.o.b. Pittsburgh or Cleveland

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net price 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.00	3.65
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250	0.25	2.90

TUBING

BOILER

Carload Discounts—Less-carloads 4 points Lower—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	42½
Charcoal iron, 3¼ to 4½-inch	9
Seamless hot rolled 3¼ to 3½-inch	46

Further discounts of five to seven 5 per cents for carloads on lap welded steel. On seamless hot rolled several more 5 per cents, and on charcoal from one 10 per cent to two 10 and one 5 per cents.

COLD DRAWN SEAMLESS

F.o.b. mill in desirable quantities

Random lengths over 5 ft.	55 per cent
Selected lengths, 1 to 18 ft.	53 per cent

WIRE PRODUCTS

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base.
Dealers 5 cents per 100 pounds extra

Bright plain wire, No. 9 gage	2.50c
Annealed fence wire	2.65c
Galvanized wire, No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
	Per 100 lbs.
Wire nails	$2.55 to 2.65
Galvanized nails	4.55 to 4.65
Polished staples	3.00 to 3.10
Galvanized staples	3.25 to 3.35
Coated nails, 100 lb. kegs, Sept. 1, 1926 extras apply	2.55 to 2.65
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts.	$20.03

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Cleveland-Pittsburgh base on products made there; Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

CAST IRON WATER PIPE

Prices per net ton

Class B Pipe

Six-inch and over, Birming'm	$30.00 to 31.00
Four-inch, Birmingham	34.00 to 35.00
Four-inch, Chicago	43.20 to 45.20
Six-inch to 24-inch, Chicago	39.20 to 41.20
Four-inch, New York	40.50 to 41.85
Six-inch and over, New York	37.25 to 38.25
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

IRON AND STEEL PIPE

Base Discounts Pittsburgh and Lorain, O., to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel*	62	50½
1 to 1½-inch butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less, Chicago del., 2½ points less.

*To large jobbers these discounts are increased on black by 1 point and a supplementary discount of 5 per cent; on galvanized by 1½ points with a supplementary 5 per cent.

CHAIN, PILING, CUT NAILS

Cut nails, c.l., f.o.b. mills	2.80c
Chain, 1-in, proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.35c

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relaying rails, St. Louis	$24.00 to 31.00
Relay, rails, Pitts. 60 to 90 lb.	$27.00 to 30.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, ⅞-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., stand.	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	70 off

Rolled thread ⅝x6 and smaller take 10 per cent lower list.

Eagle list	70 off

MACHINE BOLTS

All sizes, cut thread	70 off

Rolled thread ⅝x6 and smaller take 10 per cent lower list.

Lag screws	70 off
Plow bolts, Nos. 1-2-3-7 heads	70 off
Tap bolts	70 off
Blank bolts	70 off
Stud bolts without nuts	70 off

Stove bolts, 75, 20, 10 and 5 off in pkgs. 75, 20, 10 and 5 with 2½ off in bulk.

Tire bolts	60-5 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in. diam. and smaller	85-5 off

SQUARE HEAD SET SCREWS

Milled	80-10 off
Upset 1-in. diam. and smaller	80-10-10 off

RIVETS

Struct., c.l., Pitts.-Cleve.	2.90c
Structural, c.l., Chicago	3.00c
**⅞-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

WASHERS

Wrought, c.l., Pitts. dist.	$6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 6.90 off
Lock: To dealers	85-5 off
Lock: To consumers	85 off

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$33.00
Pittsburgh, bessemer	33.00
Youngstown	33.00
Cleveland	33.00
Philadelphia	38.30
Chicago	34.00
Forging, Chicago	39.00 to 43.00
Forging, Pittsburgh	38.00
Forging, Philadelphia	43.30

SHEET BARS

Pittsburgh	34.00
Youngstown	32.50 to 34.00
Cleveland	32.50 to 33.00
Chicago	35.00

SLABS

Pitts., Young., and Cleve.	$33.00

WIRE RODS

Pittsburgh, Cleveland	$44.00
Chicago	45.00

SKELP

All grades, Pittsburgh	1.85c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.55
Mesabi bessemer, 51½%	4.40
Old range bessemer, 51½%	4.40
Mesabi nonbessemer, 51½%	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 58-63%	8.00 to 8.50
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, alongside docks, Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese	10.00 to 10.50
North African low phosphorus	nominal
Swedish foundry or basic, 65%	9.00 to 9.50
Spanish and North African basic, 50 to 60 per cent	8.50 to 9.00
Newfoundland foundry, 55%	8.50 to 9.00

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian	36 to 38 cents
Indian	36 to 38 cents
Caucasian (53-55 per cent)	38 to 40 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$15.00 to 16.00
Washed gravel, imported duty paid, east. tidewater, net ton	15.00 to 16.38

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base	
Dead-burned grain magnesite	40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base	
9 x 4½ x 2½	45.00

Pig Iron

Shipments Hold Up but New Buying Is Lighter—Large Tonnage Placed for Last Half—Valley Market Easier

WHILE shipments of pig iron are holding up satisfactorily, current business generally shows a quieter tendency. One furnace interest at Cleveland during the past week booked over 50,000 tons for last half in anticipation of lighting another stack. New demand in eastern territory shows some improvement, with substantial tonnages placed for third quarter. A New Jersey melter is expected to close for 6000 tons. The valley market appears devoid of interest, and small sales of foundry iron have been made by one interest at $17, base, or 25 cents under the recent minimum. A Muncie, Ind., malleable foundry closed on an inquiry for 6000 tons, and at least part of this is understood to have been taken by a Cleveland furnace at about $16.

PITTSBURGH, May. 15.—Less activity is noted in the pig iron market here. Shipments, however, are going forward against contracts, and only in a few instances are shipping instructions withheld. Several makers report booking new requirements for regular customers not under contract. None has started buying for third quarter or last half. One merchant producer has sold small lots of foundry iron at $17, base, as against the recent minimum of $17.25, which is adhered to by other merchant and steelworks furnaces. Malleable is unchanged at $17.25. Basic is held at $16.50, valley, with no opportunities to quote. Bessemer is selling in single carloads at $17.50, valley.

Boston, May 15.—More than 4000 tons of pig iron was sold during the past week, the market holding up somewhat better than expected. The Mystic Iron Works booked at least 3500 tons, practically all of which is for New England foundries. A little Alabama iron was sold in the week at $16, base, Birmingham. The melt in New England is showing improvement.

New York, May 15.—Pig iron demand has broadened considerably in this district and tonnage is being taken not only for the remainder of the second quarter but also for third quarter. Crane Co., Bridgeport, has closed for 1500 tons of high silicon foundry iron, some running high and some low in phosphorus. Thatcher Furnace Co., Newark, has bought 2000 tons of No. 2 plain foundry iron. Central Foundry Co. has closed for 1000 tons of No. 2 plain foundry for its Dundalk, Md., plant. A. P. Smith Mfg. Co., Bloomfield, N. J., has increased its inquiry for third quarter and now is inquiring for 1500 tons, half each No. 2 plain and No. 2X. Of interest to the pig iron trade is the fact that the Richardson & Boynton Co. has resumed operations at its Dover, N. J., plant, following a long period of idleness there, but this plant is not expected to come in the market soon because there is a considerable stock of pig iron on hand there. Another New Jersey melter is expected to close for something like 6000 tons of foundry iron during the coming week. Prices on Buffalo foundry iron are easy, the range being $16 to $16.50, base, Buffalo, with silicon differentials in some cases waived. Eastern Pennsylvania foundry iron continues $20, base, furnace, although there has been equalizing in some cases with delivered prices quoted by furnaces located elsewhere. Moderate quantities of Dutch and Indian foundry iron continue to be sold, the Dutch at $21 to $21.50, duty paid tidewater and the Indian at $20.50 to $21, base, duty paid.

Youngstown, O., May 15.—Reports received from such important selling centers for southern pig iron as Birmingham, Cincinnati, St. Louis and Chicago, indicate the market on this grade continues to remain at $16, Birmingham, despite a small distress sale made recently at Chicago. No evidence appears in the open market of concessions in price with sales continuing to be made in 50 to 200-ton lots at $16. Alabama soil pipemakers are expected to enter the market soon for their third quarter needs.

Cleveland, May 15.—The pig iron market still shows considerable activity, with shipments continuing at a high rate, especially those to the automotive industry. Sales in the past week reported by furnace interests here totaled 63,000 tons, and one maker that took a substantial part of this for delivery over the last half is preparing to relight another stack. A Muncie malleable foundry closed on its inquiry for 6000 tons for delivery over the last half, and it is understood that at least part of this was booked by a Cleveland furnace at a price around $16, base, furnace. The general market for outside delivery heretofore has been $16.50 to $17, base, furnace. For local delivery the price continues $18, base, furnace.

Chicago, May 15.—Several important sales of spot pig iron have been made in this market and a 1000-ton spot inquiry is out for foundry iron from a Milwaukee district melter, and 500 tons in the Chicago territory. Spot fill-in tonnages continue to come out steadily, but buying for future delivery has dropped off. Some third quarter inquiry is appearing. Stocks in furnace yards are large but are well balanced as to analysis. Reports are heard here that southern pig iron has been offered at $15.50, but the only sale definitely reported at that figure is a car of distress iron. At least one sale of silvery iron is reported at $1.25 under schedule.

Foundry and malleable iron prices were marked down 50 cents to $18, base, Chicago furnace, by one interest today and it is understood others are following, to equalize competitive conditions.

Cincinnati, May 15.—The Lunkenheimer Co. is inquiring for 200 tons of 2.75 to 2.95 per cent silicon iron and 200 tons of 2.75 to 3.25 silicon, for delivery in June, July and August. Fulton Iron Works, St. Louis, wants 100 tons of malleable and 100 tons of high manganese iron for last half. One agent for a southern furnace reported sales of 525 tons in four lots

(*Concluded on Page* 1315)

Pig Iron Prices

Per Gross ton

Bessemer, valley furnace	$17.50
Bessemer, del., Pittsburgh	19.26
Basic, valley furnace	16.25 to 16.50
Basic, del., Pittsburgh	18.13 to 18.26
Basic, Buffalo furnace	17.00
Basic, del., eastern Pa.	19.00 to 19.25
Malleable, valley furnace	17.25
Malleable, del. Pittsburgh	19.01
Malleable, del. Cleveland	18.50
Malleable, Chicago furnace	18.00
Malleable, Buffalo furnace	17.50
Malleable, del. eastern Pa.	20.75 to 21.25
No. 1 foundry, Chicago furnace	18.50
No. 1X, eastern del., Phila.	21.76
No. 1X, Buffalo furnace	18.50
No. 2 foundry, valley furnace	17.00 to 17.25
No. 2 foundry, del., Pittsburgh	18.76 to 19.01
No. 2 plain, Everett, Mass., fur.	19.00 to 21.00
No. 2 plain, Buffalo furnace	17.00
No. 2 foundry, Chicago furnace	18.00
No. 2 foundry, Granite City	19.00 to 19.50
No. 2 foundry, Ironton furnace	19.00
No. 2 foundry, del. Cleveland	18.50
No. 2 plain, del. Phila	20.76
No. 2 plain Virginia furnace	20.00 to 20.50
No. 2 plain, N. J., tidewater	19.78 to 21.76
No. 2 foundry, east N. Y. fur.	18.00
No. 2 Alabama, Birmingham	16.00
No. 2 Alabama, del. Cincinnati	19.69
No. 2 Tenn., Birmingham base	16.00
No. 2 Tenn., del., Cincinnati	19.69
No. 2 Alabama, del. Chicago	22.01
No. 2 Ala., del. Chicago, river-rail	20.18
No. 2 Alabama, del. Cleveland	22.01
No. 2 Alabama, del. St. Louis	20.42
No. 2X, east. N. J., tidewater	19.78 to 22.26
No. 2X, eastern, del. Phila.	21.26
No. 2X, foundry, Buffalo furnace	17.50
No. 2X, eastern, del. Boston	23.15 to 23.65
No. 2X, Virginia furnace	20.50
Gray forge, val., del., Pittsburgh	18.76
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76 to 27.29
Low phos. copper bearing fur.	23.00 to 23.50
Charcoal, Birmingham	28.00
Charcoal, Superior, del., Chicago	27.04

Silvery iron, Jackson county (Ohio) furnace in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28; 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county (Ohio) furnace, in per cents: 10—$30; 11—$32; 12—$34; 13—$36 14—$38; 15—$40.50; 16—$43.

Coke

Surplus Held Down, Stabilizing Beehive Furnace Fuel Market—Foundry Grade Sold at $3.50

CURTAILMENT of production of beehive coke practically to the limits of contract obligations has tended to stabilize the price of the furnace grade at $2.60 to $2.65, although one interest occasionally offers small lots at $2.50. New furnace demand is lacking. Small lots of standard beehive foundry coke have been sold as low as $3.50. One eastern producer of high-grade beehive

Pittsburgh, May 15.—So few producers of standard beehive coke are operating or have any excess to offer in the open market above contract obligations, it becomes increasingly difficult to uncover figures on the furnace grade below $2.60 or $2.65. Several are maintaining $2.75 as minimum. Only one interest occasionally sells small lots at $2.50. Medium sulphur operations are confined to two or three plants quoting a minimum of $2.35. Material recently on track available at $2.25 has been absorbed. Makers of furnace coke, in the absence of blast furnace demand, continue to direct their attention to eastern gas producers, several of whom are awaiting analysis reports before closing. United Gas Improvement Co. wants 2000 tons monthly for a year and $3 has been quoted. Standard foundry coke sold yesterday as low as $3.50, one buyer taking five cars. Other sales are noted at $3.60. Most sellers want $3.75 to $4.25. Premium brands are $4.75 to $5.10. At least one maker is obtaining $6.50.

Boston, May 15.—So far as foundry coke is concerned there has been no change in shipments over the past week. A brisk demand is noted for domestic sizes. Prices are steady.

New York, May 15.—One of the manufacturers of high-grade beehive foundry coke has reduced its price 25 cents a ton and is now charging $4.85, Latrobe, Pa., which is equivalent to $8.56, delivered, at Newark, N. J. The reduced price is effective May 16 and is expected to be followed by similar action on the part of other manufacturers of premium brands of beehive foundry coke. Otherwise the market also is easier and on ordinary brands of beehive foundry coke selling prices to consumers in this territory range from $3.75 to $4, Connellsville. No change has taken place in the price of by-product foundry coke which continues to be quoted at $8.30, ovens, in northern New Jersey, equivalent to $9 to $9.40, delivered at Newark, N. J. Demand for foundry coke continues small.

Buffalo, May 15.—Demand for foundry coke which has been improving is now very good. Buffalo furnaces are operating at rates close to normal and are shipping heavy tonnage daily. Prices are $7 on domestic and $8.50 to $9 on foundry coke.

Cincinnati, May 15.—Coke prices are slightly changed, Connellsville foundry in this territory expanding from a spread of $3.60 to $4.25, the higher rate running up to $5.10. New River foundry is down 50 cents to $6.50 to $7.50 and Wise county furnace coke drops 25 cents to $4.25 and $5. Birmingham coke, quoted lately at $5 is now quoted at $4 to $5.

Chicago, May 15.—Contract specifications for by-product foundry coke are steady. Shipments this month are slightly ahead of April. All ovens in this district are lighted. The price is steady at $9, ovens, and $9.50 for local delivery.

St. Louis, May 15.—Demand for metallurgical coke is quiet. Offerings of southern coke are liberal, but little tonnage has been placed in this district. The present selling prices of local by-product manufacturers virtually eliminate competition.

Birmingham, Ala., May 15.—Coke demand is fairly good. The by-product foundry grade still is $5, base, Birmingham.

Coke Prices

Beehive Ovens	
Prices per Net Ton	
Connellsville furnace	$2.50 to 2.75
Connellsville foundry	3.50 to 4.25
New River foundry	6.50 to 7.50
New River furnace	6.00
Wise county foundry	5.00 to 5.50
Wise county furnace	4.25 to 5.00
Alabama foundry	5.00
By-Product Foundry	
Newark, N. J., del.	9.00 to 9.40
Chicago, ovens	9.00
New England, del.	11.00
St. Louis	9.00
Birmingham	4.00 to 5.00
Indianapolis, Del.	8.75
Ashland, Ky.	7.00
Portsmouth, O.	7.00
Detroit, ovens	9.00
Buffalo, ovens	8.50 and 9.00

Ferroalloys

Ferromanganese Advanced $5 for Second Half Delivery

New York, May 15.—Electro Metallurgical Sales Corp. fired the opening gun in the second half ferromanganese contracting movement May 10 by announcing an advance of $5. The new price, $105, duty paid, tidewater, became effective immediately on all new business. Other producers and sellers have followed suit. Ferromanganese is being consumed in the United States at the rate of about 320,000 tons a year. During 1927 domestic producers manufactured 292,800 tons of ferromanganese, and imports amounted to 27,860 tons. Two domestic consumers supply their own requirements out of their own production. These are the United States Steel Corp. and Bethlehem Steel Co., who, together, consume about 170,000 tons per year. Bethlehem Steel Co., sells considerable ferromanganese in the market. United States Steel Corp. subsidiaries sell some ferromanganese in the form of reciprocal trading, but are not market factors in this metal. Factors in supplying the market are Electro Metallurgical Sales Corp., and E. J. Lavino & Co., while Frank Samuel & Co. and Rogers Brown & Crocker Bros., Inc., are the importers.

A substantial business was reflected in spiegeleisen during the past week. This included quite a few spot sales at $32, furnace, for the 19 to 21 per cent grade, while some contracts involving large tonnages for forward shipment were booked at a differential of $2 under that price.

Pittsburgh, May 15.—During last Wednesday and Thursday, importers of English ferromanganese as well as domestic makers opened their books for last half, including the Electro Metallurgical Sales Corp., E. J. Lavino & Co., Bethlehem Steel Corp., and others. All of these announced an advance of $5, making the new figure $105, seaboard base, or $109.79, delivered Pittsburgh. The price also is effective immediately in connection with sparse spot demands. Specifications are slowing up a trifle on first half contracts. Practically all 50 per cent ferrosilicon buyers are taking a little less tonnage. Spiegeleisen shipments for first half promise to exceed all previous records. The spot price on 19 to 21 per cent material is $32, furnace.

Chicago, May 15.—A few inquiries are out for second half ferromanganese, but no actual sales have been reported in this district at the new price of $105, seaboard. It is understood some resistance to this price is being manifested. Carlots of spiegeleisen are quoted nominally at $32, Eastern furnace, for the 19 to 21 per cent grade.

Ferroalloy Prices

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent domestic furnace	32.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	93.00
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium, carload, producers plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

*These prices contract; spot $5 higher.

Scrap

Dealers Make Most Activity—Covering By Shorts Aids Prices—Market Mostly Dull

ACTIVITY of dealers and covering by shorts give the iron and steel scrap market most of its activity and while it has not caused strength it has forestalled a decline. Prices are somewhat weak but changes have been fractional. A large tonnage is said to have been taken directly from producer at Chicago.

Chicago, May 15.—Despite some depressing influences in the iron and steel scrap market, prices are maintaining recent strength, largely through activity of shorts. It is understood a steelworks consumer in the Chicago district has purchased 20,000 to 25,000 tons of heavy melting steel direct from a producer in Milwaukee. Consumer buying direct from producers of iron and steel scrap has become a more common practice in this territory. Heavy melting steel continues at $13 to $13.50. Due to covering of numerous short sales of borings, dealers have been paying higher prices. In several cases $10 has been offered, and usually dealers are paying $9.75 to $10. A consumer paid $11.75 for hydraulic pressed sheets, which represents an advance of 50 cents over recent sales.

Boston, May 15.—Other than rather good buying of No. 1 yard steel, local scrap brokers report the market again showing dullness. This buying is mainly for two steamships loading for Danzig. It is estimated some 10,000 tons will figure as the total this month in shipments to that port. In heavy melting steel $9.50 has disappeared and this line is weak at $9 to $9.10. Other lines are steady, with moderate demand.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except Detroit where dealers' buying prices are shown

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.75 to 11.00
Boston, dealers	9.00 to 9.10
Buffalo, No. 1	14.25 to 14.75
Buffalo, No. 2	12.50 to 13.00
Chicago	13.00 to 13.50
Cincinnati, deal.	11.25 to 11.75
Cleveland, No. 1	13.00 to 13.25
Cleveland, No. 2	12.50 to 12.75
Detroit, No. 1	11.00 to 11.25
Eastern Pa.	13.50 to 14.00
Eastern Pa., No. 2	11.00 to 11.50
Bethlehem delivery	13.50 to 14.00
N. Y., deal., R. R.	10.00 to 10.85
N. Y., deal., yd.	7.00 to 7.25
Pittsburgh, No. 1	14.50 to 15.50
St. Louis	11.25 to 11.75
Valleys, No. 1	14.25 to 14.75

COMPRESSED SHEETS

Buffalo	12.75 to 13.25
Chicago	11.25 to 11.75
Cleveland	12.50 to 12.75
Detroit	10.50 to 10.75
Pittsburgh	14.75 to 15.00
Valleys	14.00 to 14.50
E. Pa. new mat.	12.00 to 12.50

BUNDLED SHEETS

Buffalo	9.00 to 9.50
Cincinnati, deal.	9.50 to 10.00
Cleveland	11.50 to 12.00
Eastern Pa.	10.50
Pittsburgh	13.75 to 14.00
St. Louis	7.75 to 8.25

SHEET CLIPPINGS, LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.75 to 9.25
Detroit	7.00 to 7.50
St. Louis	8.50 to 9.00

STEEL RAILS, SHORT

Birmingham	11.50 to 12.00
Boston	8.50 to 9.00
Buffalo	15.75 to 16.25
Chicago	15.75 to 16.25
Cincinnati, deal.	15.25 to 15.75
Detroit	11.00 to 11.50
St. Louis	15.50 to 16.00

STOVE PLATE

Birmingham	13.00 to 14.00
Boston, consumers	10.00
Buffalo	12.75 to 13.25
Chicago, net	11.50 to 12.00
Cinn., deal., net	8.00 to 8.50
Cleveland	12.00 to 12.50
Detroit, net	10.75 to 11.25
Eastern Pa.	11.50
N. Y., deal., mill	7.50 to 8.00
Pittsburgh	12.50 to 12.75
St. Louis	12.00 to 12.50

SHOVELING STEEL

Chicago	13.00 to 13.50
Pittsburgh	10.50 to 11.00
St. Louis	11.25 to 11.75

KNUCKLES, COUPLERS SPRINGS

Buffalo	15.50 to 16.00
Chicago	14.25 to 14.75
Eastern Pa.	16.00 to 16.50
Pittsburgh	16.50 to 17.00
St. Louis	13.00 to 13.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	16.50 to 17.00
Cincinnati, deal.	12.25 to 13.25
Eastern Pa.	17.50 to 18.50
Pitts. billet and bloom crops	18.50 to 19.00
Cleve. billet and bloom crops	17.00 to 17.50

FROGS, SWITCHES, GUARDS

Chicago	13.75 to 14.25
St. Louis	12.50 to 13.00

ANGLE BARS—STEEL

Buffalo	14.00 to 14.50
Chicago	14.50 to 15.00
St. Louis	12.00 to 12.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	11.00 to 12.00
Boston, dealers	9.50 to 10.00
Buffalo, No. 1	12.25 to 12.75
Buffalo, No. 2	14.25 to 14.75
Chicago, No. 1	13.15 to 13.70
Chicago, No. 2	13.00 to 13.50
Cinn., No. 1 deal.	10.50 to 11.00
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	11.00 to 11.50
Pittsburgh, No. 1	11.00 to 11.50
Pittsburgh, No. 2	14.50 to 15.50
St. Louis, No. 1	9.50 to 10.00
St. Louis, No. 2	11.25 to 13.75

WROUGHT PIPE

Boston, dealers	7.75 to 8.25
Eastern Pa.	12.50
Buffalo	12.00 to 12.50
New York, deal.	8.00 to 8.50

YARD WROUGHT

Boston	8.00 to 8.50
Eastern Pa.	14.50 to 15.00

BUSHELING

Buffalo	12.75 to 13.25
Chicago, No. 1	11.00 to 11.50
Chicago, No. 2	8.50 to 9.00
Cinn., No. 1 deal.	10.00 to 10.50
Cinn., No. 2	6.00 to 6.50
Cleveland, No. 2	9.25 to 9.50
Pittsburgh, No. 1	12.00 to 12.50
St. Louis, No. 1	9.50 to 10.00
Detroit, mixed	7.25 to 7.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston	5.50 to 5.75
Buffalo	9.00 to 9.50
Chicago	7.00 to 7.50
Cincinnati, deal.	7.50 to 8.00
Cleveland	7.25 to 7.50
Detroit	6.00 to 6.50
Eastern Pa.	10.75
New York, deal.	6.25 to 7.35
Pittsburgh	10.00 to 10.50
St. Louis	7.00 to 7.50

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	5.75 to 6.00
Buffalo	9.50 to 10.00
Cincinnati, deal.	8.00 to 8.50
Cleveland	9.25 to 9.50
Detroit	6.75 to 7.00
Eastern, Pa.	10.00 to 10.50
New York, deal.	6.75 to 7.35
Pittsburgh	10.50 to 11.00

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	8.00 to 9.00
Boston, chem.	9.50 to 10.00
Boston, dealers	6.00 to 6.50
Buffalo	9.75 to 10.25
Chicago	9.50 to 10.00
Cincinnati, deal.	8.25 to 8.75
Cleveland	9.25 to 9.50
Detroit	6.75 to 7.00
Eastern Pa.	10.50 to 11.00
Eastern Pa., chem.	14.50 to 15.00
New York, deal.	6.75 to 7.35
Pittsburgh	10.75 to 11.25
St. Louis	8.75 to 9.25
Valleys	13.50

PIPES AND FLUES

Chicago, net	8.50 to 9.00
Cincinnati, deal.	7.00 to 7.50
St. Louis	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.50 to 12.00
Chicago, net	11.50 to 12.00
Eastern Pa.	11.50
New York, deal.	8.00 to 8.50
St. Louis	11.00 to 11.50

FORGE FLASHINGS

Boston, deal.	6.75 to 7.25
Buffalo	12.00 to 12.50
Chicago	9.50 to 10.00
Cleve., over 10 in.	11.75 to 12.25
Detroit	9.00 to 9.50
Pittsburgh	13.00 to 13.50

FORGE SCRAP

Boston, deal.	6.00 to 6.50
Chicago	15.50 to 16.00
Eastern Pa.	11.00 to 11.50

ARCH BARS AND TRANSOMS

Chicago, net	18.50 to 19.00
St. Louis	19.50 to 20.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	12.50 to 13.00
Chicago	10.25 to 10.75
Cleveland	12.00 to 12.25
Eastern Pa.	12.00 to 12.50
Pittsburgh	13.00 to 13.50
St. Louis	9.50 to 10.00

STEEL CAR AXLES

Birmingham	16.00 to 17.00
Boston, ship. point	15.50 to 16.00
Buffalo	16.75 to 17.25
Chicago	17.65 to 18.20
Cleveland	16.00 to 16.50
Eastern Pa.	20.00 to 21.00
Pittsburgh	18.50 to 19.00
St. Louis	18.00 to 18.50

SHAFTING

Boston, ship. point	13.00 to 13.50
Chicago	17.35 to 17.90
Eastern Pa.	17.50 to 18.00
New York, deal.	14.00 to 14.50
St. Louis	16.50 to 17.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	14.00 to 15.00
Boston, con.	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	15.25 to 15.75
Chicago, iron	13.50 to 14.00
Chi., rolled steel	15.50 to 16.00
Cincinnati	12.00 to 12.50
Eastern Pa.	16.00
N. Y., iron, deal.	11.50 to 12.00
Pittsburgh, iron	14.50 to 15.00
Pittsburgh, steel	16.50 to 17.00
St. Louis, iron	13.00 to 13.50
St. Louis, steel	13.50 to 14.00

No. 1 CAST SCRAP

Birmingham, cup.	14.00 to 14.50
Boston	15.00 to 15.25
Buffalo	14.50 to 15.00
Chicago, machiny.	15.95 to 16.50
Chicago, railroad.	14.30 to 14.85
Chicago, agri.	14.00 to 14.55
Cincinnati, mach. cupola, net deal.	14.50 to 15.00
Cleveland, cupola	15.50 to 16.50
Detroit, net	12.25 to 12.75
Eastern Pa. cupola	16.00 to 16.50
N. Y., cup., deal.	13.00 to 13.50
Pittsburgh, cupola	14.50 to 15.00
San Fran., del.	20.00 to 21.00
Seattle	14.50 to 15.00
St. Louis, railroad	13.00 to 13.50
St. Louis, agri.	13.00 to 13.50
St. Louis, machy.	13.00 to 13.50
Valleys	16.50 to 17.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	11.50 to 12.00
Cleve., breakable	12.25 to 12.50
Detroit, auto., net	20.00 to 21.00
Detroit mach., net	12.75 to 13.25
Eastern Pa.	15.50 to 16.00
New York, deal.	11.50 to 12.00
Pittsburgh	13.00 to 13.25

MALLEABLE

Boston, railroad	13.00 to 13.50
Buffalo	15.00 to 15.50
Chicago, agri.	11.75 to 12.25
Chicago, railroad	12.75 to 13.00
Cinn., R. R., deal.	12.00 to 12.50
Cinn., agri., deal.	11.75 to 12.25
Cleveland, agri.	15.00 to 15.50
Cleveland, rail.	15.50 to 16.00
Detroit, auto	14.50 to 15.00
Pittsburgh, rail.	15.00 to 15.50
St. Louis, agri.	11.50 to 12.00
St. Louis, rail.	11.50 to 12.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.00 to 13.50
Boston, dealers	9.75 to 10.00
Buffalo	13.75 to 14.25
Chicago	14.00 to 14.50
Eastern Pa.	14.75 to 15.25
New York	11.00 to 11.50
Pittsburgh district	16.50 to 17.00
St. Louis	13.00 to 13.50

LOCOMOTIVE TIRES

Chicago, No. 1	14.00 to 14.50
Chicago, cut	16.00 to 16.50
St. Louis, No. 1	12.00 to 12.50

LOW PHOS. PUNCHINGS

Chicago	14.50 to 15.00
Pittsburgh	16.50 to 17.00

The Market Section

New York, May 15.—Hydraulic compressed sheets now involve considerable tonnage in the eastern market. Prices are well set in accordance with what Bethlehem Steel Co. pays, $1.50 a ton less than for heavy melting steel, on hydraulic compressed sheets made from new scrap and shipped direct from plants where the scrap is produced. Bethlehem Steel Co. deducts $2 from the price of No. 1 heavy melting steel on hydraulic compressed sheets shipped from dealers' yards.

Scrap dealers' buying prices here continue unchanged, with little fresh consuming demand. More business would materialize in at least a couple of important instances, were dealers willing to meet the offered prices. A Phoenixville, Pa., consumer, for one, is offering $11.50, delivered for stove plate, but is understood to have found no takers.

Philadelphia, May 15.—Blast furnace borings and turnings are being purchased extensively by an eastern consumer. Prices being paid are $10.50 and $10, delivered, eastern Pennsylvania.

Buffalo, May 15.—The scrap market is quiet. No large consumer is buying, some are holding up shipments, and small-lot sales of specialties show a trend toward lower prices.

Pittsburgh, May 15.—Due to the presence of dealers rather than consumers, the scrap market shows a spurt of activity. This lack of consumer buying creates a wide price range where prices are not definitely lower by 25 or 50 cents per ton. For heavy melting steel some dealers are paying $14.50 at some points and around $15 at others. Last sales to consumers were at $15.50 and heavy melting steel is considered quotable at $14.50 to $15.50.

Cleveland, May 15.—A consumer has purchased No. 1 heavy melting steel at $14, against which dealers are offering $13.50 to $13.60. This transaction is an exception to the general trend, this grade being quoted at $13 to $13.25, against the former range of $13.25 to $13.75. No. 2 heavy melting is 25 cents lower at $12.50 to $12.75. Shoveling steel turnings are slightly weaker at $10 to $10.50. The market shows no improvement, scattered lots of small tonnage comprising practically all the business being done. Shipments by boat from Detroit continue large, but only a portion is being absorbed here. Some mills still are regulating shipments.

Detroit, May 15.—Somewhat better sentiment has appeared in the iron and steel scrap market here but little change is felt. Compressed sheets appear a shade easier and machinery cast is a little stronger.

Cincinnati, May 15.—Iron and steel scrap continues at the same low ebb. Lowering of prices in a few lines has not stimulated buying. There is no change of prices.

St. Louis, May 15.—The undertone of iron and steel scrap continues decidedly strong, but actual trading is not in impressive volume. Consumers are taking only requirements, and no contracts involving real tonnage have been reported.

In the immediate past mills and foundries have been feeling out the market with the view of adding to their holdings, but there is a disposition to resist asking prices. The melt has been well maintained, and reserves of several important users are considerably smaller than thirty days back.

Birmingham, Ala., May 15.—While melters of iron and steel scrap are constantly offering business in small lots, dealers complain of uncertainty. Heavy melting steel is quoted at $10.75, delivered.

Bolts, Nuts, Rivets

Nut, Bolt Tonnage Picking Up with Operations Around 65 Per Cent

NUT AND BOLT PRICES, PAGE 1300

Pittsburgh, May 15.—Nut, bolt and rivet plants keep fairly busy, average operations being 60 or 65 per cent. Some rivet makers note a slight setback compared with the active period when customers specified out all the low priced material they had on order. Some still have good order books. While some reports of price concessions come from the East, rivetmakers here are firmly adhering to 2.90c and believe this will hold for third quarter. Tonnage in nuts and bolts is picking up and May promises to equal the monthly average for first quarter. Producers have no difficulty in obtaining 70 off list. Jobbers are not specifying liberally, buying hand to mouth. Machine bolts for construction and car building are growing. Small rivets are unchanged at 70 and 10 off and miscellaneous orders are lively.

Philadelphia, May 15.—American Brown Boveri Electric Corp. has placed orders for over 100 tons of rivets for carfloats for the Pennsylvania railroad. The rivet market is weak, and prices as low as 2.70c, base, Pittsburgh, are done in some cases. The usual price continues 2.90c. Bolts and nuts continue firm in price but specifications are light.

Cleveland, May 15.—Operations of bolt and nut manufacturers continue about 65 per cent of capacity, with specifications equal to or better than a month ago. Rivet production shows little change, but new buying is fairly well maintained. Prices are firm at 70 off for bolts and nuts and 2.90c, Cleveland, for rivets.

In 1874 the first steel soda fountain was manufactured.

Semifinished

Specifications for Billets and Slabs Show Slight Increase—Sheet Bar Tendency Higher

SPECIFICATIONS for semifinished steel are holding up, as reflected in the generally high operating rates of the mills. Some increase is noted in shipments of billets and slabs, which for the first half of May exceed those for either the first or last half of April. While the price tendency in sheet bars is higher for third quarter, one valley interest is reported to be holding for $34.

SEMIFINISHED STEEL PRICES, PAGE 1300

Chicago, May 15.—Semifinished material continues active with specifications up to the rate of the past several months. No appreciable falling off in demand for sheet bars has been shown and the price quoted remains at $35, Chicago. The quotation for 4 x 4-inch billets is $34, Chicago. Forging billets are quoted $39 to $43, according to grade. A chain company purchased a moderately heavy tonnage of wire rods at $45, Chicago.

Buffalo, May 15.—Open hearth operation in the Buffalo district is slightly lower. Twenty-nine of 36 units are making steel.

Cleveland, May 15.—Specifications for sheet bars, billets and slabs continue to enable the leading merchant interest here to operate at 100 per cent. Little business is being done in the open market. While some valley makers have indicated a higher price for sheet bars for third quarter, books here have not been opened for that period, and the top of the current market is $33, base, Cleveland, for sheet bars, billets and slabs with $32.50 applying in some instances on sheet bars.

Youngstown, O., May 15.—With local mills continuing to make satisfactory shipments of sheet bars, billets and wire rods, the semifinished trade appears steady. Some tendency seems to be gaining headway toward crystallizing of the sheet bar price around $34, Pittsburgh or Youngstown. Large billets hold at $33 as they have right along.

Philadelphia, May 15.—Several small lots of billets were sold in the past week at $33, base, Pittsburgh, for rerollers and $38 for forging.

Pittsburgh, May 15.—Billets are quoted firmly at $33 for the 4 x 4-inch rerolling, and while that figure may have been granted by way of adjustment on sheet bar contracts during recent weeks, the sheet bar price tends toward firmness for the third quarter. Forging billet specifications are heavier upon $38 contracts, although but little tonnage is going into oil well tools.

Bars

May Specifications Exceed April and Third Quarter Buying Nears —Prices Hold Well

SOFT steel bars being specified from mills at present are going directly into use and stocks are not being accumulated by consumers. At Chicago specifications are equal to shipments and the past week is the best in some time. At Pittsburgh May is bringing better tonnage than April. Jobbers find faster turnover but are buying only to keep stocks full.

BAR PRICES, PAGE 1299

Chicago, May 15.—Consumers of bars and other finished material are placing specifications with mills in the Chicago district equal to shipping orders. One mill reports specific orders during the week were best in the past six weeks and contract sales the heaviest in three weeks. Most buying is for close-range delivery. Contract obligations are dwindling steadily on the whole. Mills expect third quarter interest in three to four weeks, and reports here that Eastern mills are seeking to establish 1.90c, Pittsburgh, for that period have stimulated determination of Chicago district producers to maintain the Chicago price at 2.00c, mills. Cold bar finishers and tractor builders are taking heavy quantities of bar products. Road machinery builders are active. Mills see some impetus in offers from forgers and automotive frame and parts makers. Farm equipment lines, due to approaching inventory, are tapering.

Mills are obtaining 2.00c, Chicago, for soft steel bars bought for stock, and are naming this price for contract business. Eastern mills again have come into the market at 1.95c, Chicago, for moderate tonnages.

Spring credit terms for rail steel fence posts will be announced early in June, a month later than usual. This is expected to stimulate sales. Distributors have been holding fairly heavy stocks from last year. Rail steel bars for barn equipment manufacture are moving moderately well. Some farm implement lines have dropped off. The price of rail steel bars to the manufacturing trade is steady at 1.85c, Chicago Heights. Bar iron is reported firm at 2.00c, Chicago.

Pittsburgh, May 15.—As compared with most of April, May specifications in merchant steel bars are surprisingly active. This would indicate that low-priced supplies from closing out old contracts have all been absorbed and that now consumers are reaching higher priced material. Opinion is that bars thus specified are not going into stock but into actual consumption. Producers are encouraged over the increased tonnage received, and from present indications the increased rate will prevail throughout the month. They expect that May will prove one of the best months of the year so far. Jobbers order only as needed but their turnover is somewhat more rapid. The market is firm at 1.85c and occasionally 1.90c is still obtainable, and producers are counting on being able to obtain that figure for third quarter. No start has been made against third quarter or last half business but this will come within the next few weeks. Bar deliveries can mostly be made within a week or 10 days. On a few sizes slightly more time is required.

Consolidate Offices

Philadelphia, May 15.—New York and Philadelphia branch offices of the Republic Iron & Steel Co. and the Trumbull Steel Co., Youngstown, have been consolidated under the name of the former.

Cotton Tie Price Based on Quantities

Pittsburgh, May 15.—Last week the cotton tie market was opened for the season, a different method of quoting being inaugurated, namely quantity basis. Mill shipments in carloads, delivered Atlantic or gulf ports, are quoted at $1.27 per 45-pound bundle. When 2000 bundles are purchased, the price is reduced by two cents to $1.25, and larger quantities are priced at $1.23.

The 1927 price was $1.20 f.o.b. Atlantic ports, and $1.21 f.o.b. gulf ports, while the year before the price was $1.20 f.o.b. gulf ports, and $1.22 f.o.b. Atlantic ports. Prior to 1924 prices were quoted f.o.b. Pittsburgh but since that time f.o.b. port prices have applied in meeting quotations upon imported cotton ties, and because of the abolition of the Pittsburgh basing point.

American Rolling Mill Co. has moved its Pittsburgh office from 432 to 1632 Oliver building.

Plates

Market Fairly Active, and Prices Steady—Demands Slightly Better Than April Rate

DIVERSIFIED plate needs are building up a larger plate tonnage this month for mills in the Pittsburgh district than they experienced in April. Operations in the Chicago district are at 90 per cent of capacity. Eastern demands continue on substantial basis. During the week 6000 tons was placed for southwestern oil tank fabrication, and 8000 tons additional are pending.

PLATE PRICES, PAGE 1299

Pittsburgh, May 15.—Diversified needs of plate users, boiler shops, barge, tank builders and others are supplying the plate mills with better plate tonnage this month than last. In some cases the improvement over the April buying and shipping rates is 10 to 25 per cent. Plate mills are greatly encouraged over prospects of a better car buying rate, some coal cars for southern railroads being under inquiry representing a fairly large plate tonnage. A local fabricator is shipping a 26-foot hearth jacket for a new blast furnace which a local steel interest is erecting. The Midland Barge Co. is low bidder on 40 pontoon barges for Rock Island, Ill. The trade anticipates an active barge market throughout the summer and understands that some attractive inquiries are in the formative stage.

No action has been taken on the ten gasoline hoisting barges and the five scows on which the New York Central railroad recently took revised bids. These vessels altogether involve about 1800 tons of steel.

New York, May 15—Demand for plates in this territory continues of substantial proportions and the general market continues firm at 2.00c to 2.05c, base, Coatesville, equivalent to 2.175c to 2.225c, delivered New York. The Standard Oil Co. of New Jersey has an inquiry out for substantially 100 tons of plates for storage tanks in Canada. Structural demand for plates is good but is not up to the volume of the corresponding time last year.

Chicago, May 15.—Plate mill operations are continuing close to 90 per cent in this district. One mill reports consumers' specifications equal to shipping orders. A local fabricator has taken 6000 tons of oil tank plates for fabrication and shipment to the Southwest. About 8000 tons are on inquiry for Louisiana and Texas oil districts. Bids will be received June 1 for 12,000 tons of plates to be used for water mains in Denver. An eastern seller has entered this market with several small orders at 1.90c and 1.95c, Chicago. Concessions are reported made to fab-

ricators of oil tank plates for material shipped to the Southwest.

Philadelphia, May 15.—Plate demand is well maintained. Prices continue 2.00c to 2.05c, Coatesville, on most business.

CONTRACTS PLACED

1000 tons, forty 38 x 14 x 3-foot pontoon barges, for United States engineers, Rock Island, Ill., to the Midland Barge Co.
200 tons, tank for the United States government, Fort Benning, near Columbus, Ga., to the Pittsburgh-Des Moines Steel Co.
200 tons, two snag barges, 84x24x3.9 feet, United States engineers, Memphis, Tenn., to the Dravo Contracting Co.
150 tons, Standard Oil Co. work, San Francisco, to unnamed eastern mill.
150 tons, two tanks and towers for Zellerbach Paper Co., Port Townsend, Wash., to Chicago Bridge & Iron Works.
100 tons, two tanks for Grays Harbor Pulp & Paper Co., Grays Harbor, Wash. to Chicago Bridge & Iron Works.
100 tons, 48-inch pipe line job, Tacoma, Wash., to Birchfield Boiler Works.

CONTRACTS PENDING

12,000 tons, water mains at Denver; bids to be opened June 1.
2100 tons, pipe line job, Tacoma, Wash.; bids in.
700 tons, carfloat for Western Pacific, San Francisco; bids being received.
650 tons, dredger and two scows for State Harbor commission, San Francisco; bids opened.

Steel Corp. Orders Show 463,073-Ton Loss

Unfilled bookings of the United States Steel Corp. as of April 30, were 3,872,133 tons, a decline of 463,073 tons from March 31, when the total was 4,335,206 tons. This is a loss of 10.7 per cent from the March figure. This is the second consecutive month to show a decline, after five months of steady increase. Following is a comparative statement:

Date	Total	Change, tonnage	Change, per cent	
Apr. 30, 1928	3,872,133	463,073—	10.7	—
Mar. 31, 1928	4,335,206	62,983—	1.43	—
Feb. 29, 1928	4,398,189	122,242+	2.8	+
Jan. 31, 1928	4,275,947	303,073+	7.62	+
Dec. 31, 1927	3,972,874	518,430+	15.	+
Nov. 30, 1927	3,454,444	113,404+	3.39	+
Oct. 31, 1927	3,341,040	192,921+	6.1	+
Sept. 30, 1927	3,148,113	47,924—	1.49	—
Aug. 31, 1927	3,196,037	54,023+	1.7	+
July 31, 1927	3,142,014	88,768+	2.8	+
June 30, 1927	3,053,246	2,305+	0.075	+
May 31, 1927	3,050,941	405,191—	11.7	—
Apr. 30, 1927	3,456,132	97,008—	2.72	—
Mar. 31, 1927	3,553,140	43,979—	1.22	—
Feb. 28, 1927	3,597,119	203,058—	5.34	—
Jan. 31, 1927	3,800,177	160,792—	4.5	—
Dec. 31, 1926	3,960,969	153,522+	4.1	+
Nov. 30, 1926	3,807,447	123,786+	3.36	+
Oct. 31, 1926	3,683,661	90,152+	2.50	+
Sept. 30, 1926	3,593.509	51,174+	1.42	+
Aug. 31, 1926	3,542,335	60,187—	1.67	—
July 31, 1926	3,602,652	124,010+	3.56	+
June 30, 1926	3,478,642	170,608—	4.41	—
May 31, 1926	3,649,250	218,726—	5.91	—
Apr. 30, 1926	3,867,976	511,959—	13.9	—
Mar. 31, 1926	4,379,935	236,887—	5.13	—
Feb. 28, 1926	4,616,822	265,917—	5.7	—
Jan. 31, 1926	4,882,739	150,625—	3.0	—
Dec. 31, 1925	5.033.364	451.584+	9.8	+

Iron carbide and graphite first were separated in 1786.

Pipe

Mill Operations Up Slightly but Buying Is Spotty—Cast Demand Has Diminished

ACCUMULATION of small tonnage orders has enabled tubular products mills to step up operations slightly. Gas and oil line pipe activity now is limited to prospective purchases. Cast iron pipe demand has eased off from the large tonnage buying of recent weeks. New York has taken bids on 2200 tons of 8 to 12-inch. Cast pipe prices continue to show an upward trend.

PIPE PRICES, PAGE 1300, 1332

Pittsburgh, May 15.—Standard full weight merchant pipe jobbers have used up most of the pipe they gathered in prior to the price change last month when an extra 5 per cent discount was dropped. They are ordering material now on the higher basis and the turnover is fairly rapid. None carry extensive stocks. Pipe mill operations are increasing, 60 to 65 per cent being now the general average, as against a recent 50 to 55 per cent rate. Shipments this month are expected to exceed April's by a slight margin. Formal inquiries for line pipe from gas or oil producers are not developing although several gas lines continue to be talked about. The laying of the gas line from Amarillo, Tex. to Kansas City, Kans., order for which was placed with a Milwaukee manufacturer, is being held up by a court injunction, the company distributing gas to domestic users claiming that the interests seeking to distribute gas to industrial users in that territory is infringing on its rights. Orders for oil country goods are increasing although they do not equal the tonnage of two or three years ago.

New York, May 15.—The recent opening of bids on 2200 tons of 6 to 12-inch cast pipe for the local water department reflects an upward tendency in prices, quotations ranging from about $39.50 to $39.90, delivered city yards. Details are noted under "Contracts Pending" of this page. Early action is expected on 11 miles of 6, 8 and 10-inch cast pipe for Wall township in southern New Jersey. Demand generally is fair.

Youngstown, O., May 15.—Including both seamless and welded pipe units, the tubular industry, in this district is operating at 75 per cent. This is equal to last year's local record and appears due largely to continued good demand for buttweld or building construction pipe. Oil country demand still is only fair. New buying is moderate but the approach of the new contracting period is expected to bring out additional business in general pipe lines.

Cleveland, May 15.—Merchant pipe demand continues on an even keel. With the completion of April quota shipments, the market has become established firmly on the present price basis of one and five off on black and one and one-half and five off on galvanized. Sluggish building operations in the Cleveland territory are regarded by pipe sellers as a handicap to heavy sales in May and June, inasmuch as jobbers covered for prospective business in April.

Chicago, May 15.—Several important tonnages of cast iron water pipe have been placed through contractors by sellers in this district on the basis of $33, base, Birmingham, for 6 to 24-inch. Prices paid at Detroit and Milwaukee show the domestic made product above $30. Public utilities are buying more liberally than a few weeks ago. Important municipal inquiry is developing. A Detroit contractor has been awarded about 30,000 feet of pipe for Dearborn, Mich.

Birmingham, Ala., May 15.—Cast iron pressure pipe lettings have been more active recently, two or three large orders having come in. Production is not being increased, the output being estimated around 80 per cent capacity. The price base is $30 to $31 for 6-inch and over sizes and there is a firm adherence to the base. Shipments are equal to and a little better than the make.

CONTRACTS PLACED

152 tons, 2 to 8-inch class B, Camas, Wash., through C. A. Knapp, to unstated maker.
100 tons, 4, 6, and 8-inch cast iron pipe for South Vancouver, B. C., to Evans, Coleman & Evans for Canadian pipe.

CONTRACTS PENDING

2200 tons, 8 to 12-inch cast pipe for the department of water supply, gas and electricity, New York; R. D. Wood & Co. low on 1000 tons of 12-inch and the Donaldson Iron Works and the United States Cast Iron Pipe & Foundry Co., on two lots of 600 tons of 8-inch pipe.
1800 tons, 30 and 36-inch class B, Venice outfall sewer, Los Angeles; United States Cast Iron Pipe & Foundry Co. low bidder.
1200 tons, 6 to 16-inch cast iron pipe, St. Paul; bids in May 15.
600 tons, 12-inch cast pipe for the department of water supply, gas and electricity, New York; the eKnbar Construction Co. low on the general contract.
364 tons, 2 to 10-inch class B, Livingston, Calif.; bids in May 14.
234 tons, 24-inch class B, Los Angeles; bids rejected.
180 tons, 30-inch straight, 7.20 tons lugged and 2.37 tons special pipe, Milwaukee; bids in May 23.
149 tons, 14-inch class B or 250, Puyallup, Wash.; bids July 10.
113 tons, 18-inch class B, dredging project, San

Diego, Calif.; bids in June 4.
100 to 225 tons, cast iron pipe and fittings, Chicago; bids in May 21.
Unstated tonnage, eleven miles of six, 8 and 10-inch cast pipe for Wall township, Southern New Jersey, early action expected.

Tin Plate

Mill Operations Continue at High Rate —Demand Steady

TIN PLATE PRICES, PAGE 1299

Pittsburgh, May 15.—Approximately 95 per cent of the tin mills are in operation but production is on an even higher basis at many of the units, since output of the various efficient tin mills is extremely high. Large can makers are ordering heavily, preparing for a record-breaking consumption. General line can demand is fairly steady from month to month, and constantly growing. Books have not been formally opened for last half, although that period already has been entered to a certain extent by anticipated rollings. It is expected that the same $5.25 price per base box will rule. The Jones & Laughlin Steel Corp., McKeesport Tin Plate Co., Weirton Steel Co., Bethlehem Steel Corp. and other tin plate producers are operating practically full. The American Sheet & Tin Plate Co. starts the week at 97 per cent but usually averages 93 or 94 per cent for the week.

Iron Ore

Market Is Strong—Shipments to Furnaces to Show Expansion

IRON ORE PRICES, PAGE 1300

Cleveland, May 15.—The market for Lake Superior iron ore is strong, and producers look forward to a good year. Shipping instructions are liberal. There were practically no lake shipments of iron ore in April this year, because of ice conditions, while last year in the same month shipments amounted to about 1,500,000 tons. The consequence was that less ore went forward to furnaces in April, as shown in the government's report of reduced freight car loadings for iron ore. Receipts of iron ore at Lake Erie docks in April were nil, against 732,786 tons in April 1927. The shipments from Lake Erie docks in April totaled only 397,246 tons compared with 1,150,567 tons in April 1927. Last month's shipments were comprised largely of stockpile ore. Now that the vessel movement is under way freight car loadings will show considerable expansion. Lake Erie dock balances of ore May 1 totaled 5,182,388 tons, against 4,703,294 tons May 1, 1927.

Vessel rates for iron ore have been reaffirmed on the basis of 70 cents a ton from ports at the head of Lake Superior to Lake Erie and Lake Michigan ports, 63 cents from Marquette and 52½ cents from Escanaba to Lake Erie ports, and 42 cents from Escanaba to Lake Michigan ports.

Sheets

Most Consuming Lines Taking Normal Tonnages—Automotive Buyers Placing Specifications

ALMOST every sheet consuming line is taking normal tonnages for this season of the year. General Motors Corp. units and the Ford Motor Co. have placed attractive specifications. Some users of automotive sheets are making arrangements for last half requirements. Pittsburgh mill operations average 80 to 85 per cent, while Mahoning valley operations are around 72 per cent.

SHEET PRICES, PAGE 1299

Pittsburgh, May 15.—Incoming business developing from week to week among the sheet makers represents a fairly large aggregate tonnage, and orders are coming from a diversified line. Attractive automotive specifications reached here last week from the General Motors Corp. units, the Ford Motor Co., and various fender, body and other parts makers. Some already are making arrangements for last half requirements although books have not been formally opened. Metal furniture makers are taking more than they usually do during this month. While prices on galvanized corrugated roofing sheets indicate keen competition, the lower prices usually are on poor quality sheets. In connection with flat galvanized sheets, 3.65c to 3.75c are the usual prices quoted, some makers claiming still to be obtaining the maximum figure. The 2.90c figure has disappeared on black sheets, the top of the market now being 2.85c. Blue annealed sheets are quoted at 2.00c to 2.10c, and while makers have reports that under that minimum has been quoted in some sections, they do not believe they would be getting so many specifications at the full 2.10c price if a figure less than 2.00c were at all common. One price, namely 4.00c, is quoted on full finished auto body sheets and last week tonnage was surprisingly high in view of the slowed-down operating rates here and there throughout the consuming trade. Operations of sheet mills are on an 80 to 85 per cent basis, the American Sheet & Tin Plate Co. being 78 or 79 per cent.

New York, May 15.—Demand for sheets reflects some improvement. There continues active competition for the new business that is offered and prices reflect an easy tendency. On black sheets the current market ranges from 2.65c to 2.75c, base, Pittsburgh. On galvanized sheets the market is 3.55c to 3.65c, base, Pittsburgh, and jobbers are able to buy at 3.50c. While some blue annealed business has been going at 2.00c, base, Pittsburgh, the usual figure is 2.10c and most of the mills continue to refuse to shade 2.10c.

Youngstown, O., May 15.—Sheet mill output is practically unchanged here this week, independent mill activities dropping to 72 per cent, against 73 per cent last week and 76 per cent the week before. There appears to be a bit more snap in the market, and minimum quotations on common black sheets are holding around 2.75c, while the bulk of the current shipments from mills average between 2.80c and 2.85c, Pittsburgh. Autobody sheetmakers are as busy as ever, continuing to work overtime to satisfy insistent demands. Some tapering off is noted with certain auto parts makers, but others' expansion of activities is offsetting the loss. Demand for blue annealed and galvanized sheets is fair. Autobody holds at 4.00c, blue annealed at 1.90c to 2.10c, galvanized at 3.60c to 3.75c, and common black at 2.70c to 2.85c, Pittsburgh.

Cleveland, May 15.—Extreme quietness characterizes the local sheet steel market. Sales by more than a half dozen sellers in this district during the week would not exceed a dozen carloads. Black sheets seem to have firmed with most of the current sales at 2.80c, Pittsburgh. The price on good quantities continues 2.75c. Galvanized sheets were sold at 3.65c in small quantities. Autobody sheets at 4.00c are firm, although no buying has been transacted during the week. Metal furniture stock is in fair demand at 3.75c to 3.95c. One producer has increased its price $1 a ton on enameling stock iron sheets.

Chicago, May 15.—Sheet prices continue unsteady. Mills are quoting a straight 2.80c, Gary and Indiana Harbor, for No. 24 black. The Chicago delivered price is $1 a ton higher. The mill price for No. 24 galvanized is 3.75c and for No. 10 blue annealed the price is 2.20c. Orders are individually light and rush shipment is being urged. It is indicated that many of the users who have pyramided orders for some time have fairly good stocks on hand. Operations for the district are about 60 per cent. One group of hot mills started operations in full the first of this week, but it is uncertain whether that operating rate can be continued until next week.

St. Louis, May 15.—A lower trend in prices features the sheet market. Producers and distributors report erratic buying, fair to good days alternating with poor ones. All classes of users are purchasing closely, and only enough to last from week to week. Prices have been lowered on one pass cold rolled, blue annealed and galvanized, the latter being quoted by the leading local producer at 3.75c, f.o.b. Gary basis.

Structural Shapes

Metropolitan New York Market Showing Renewed Life—Large Projects Still Active—Third Quarter Price Trend Indicates Increase

STIMULATED by several large tonnage projects, the New York structural market is showing renewed signs of life. Featuring inquiries now up for figures is the 16,000-ton warehouse to be constructed and a 600-ton Western Union Telegraph Co. building. Chicago also is more active, estimated pending structural business exceeding 100,000 tons. Other sections of the country show little signs of large scale purchasing. Bridgework continues a feature of awards.

Plain material prices indicate an increase for third quarter contracting, 1.90c, Pittsburgh, equivalents being considered the probable level. Eastern makers have entered the Chicago territory at 1.95c, Chicago, in competition with the 2.00c quotation of local producers on small lots.

STRUCTURAL SHAPE PRICES, PAGE 1299

New York, May 15.—The local structural market is showing more life. While awards still are restricted, larger tonnage is being placed than a week ago and pending business is more active. Included in the latter are several sizable tonnages. Subway work is developing slowly due chiefly to current legal controversies. Heavy tonnage of work on which bids have been taken still is pending and a considerable volume of new work is being delayed. Both fabricated material and shape prices are unchanged, with weakness particularly evident in the fabricated material market.

Boston, May 15.—Larger and more favorable tonnages pending in this district for the past fortnight are on the point of being awarded. There has been good buying of small tonnages in the past week.

Buffalo, May 15.—Structural fabricators report a disappointing volume of spring bookings. A large amount of western work is held by one of the largest Buffalo plants but nearby tonnage for fabrication continues much below seasonal averages. Much of the capacity of structural mills of district steel works has been devoted to rail making during the early part of this year.

Philadelphia, May 15.—Structural steel demand has improved somewhat and further development is expected in view of lettings which now are at the highest volume of the year. The usual prices are 2.07c to 2.18c, delivered, Philadelphia, with considerably lower possible on preferential tonnage.

Pittsburgh, May 15.—While inquiries involving structural shapes are good, awards are slow to reach fabricators. Owners seem to be playing for time, and contractors are asking for the extension of bidding time in some cases while in others bids are thrown out and the jobs readvertised. While plain structural material is firm at 1.85c and a few small sales are noted still at a 1.90c figure, bids on material fabricated and delivered or fabricated and erected indicate the hunger shops still have for work. Specifications are coming in freely on second quarter contracts.

Cleveland, May 15.—Dullness in the local structural steel market was broken during the week by only two contracts taking more than 100 tons each. Several awards are expected during the week, but heavy inquiries are not being figured. Plain material prices are steady at 1.85c, Pittsburgh, with prospects of 1.90c being named for third quarter contracts. Specifying of plain material is only fair. Present unsatisfactory conditions in building are demonstrated in the fact that only three general contractors bid on two junior high schools to cost over $500,000 each. Competition and the city's method of payment also were factors.

Chicago, May 15.—Structural mills in the Chicago district are obtaining 2.00c, Chicago, for plain material bought by fabricators to replenish their stocks. On several highly competitive jobs the price of 1.95c has been named and it is reported that several sales have been made in this territory by eastern mills at the latter figure, the tonnage involved having been small. Prospective projects are numerous but many of these are in the preliminary stage. A syndicate is financing a project to build a $3,500,000 garage and office building at the edge of the Chicago loop. One estimate is that projects totaling about 100,000 tons are in the making in this territory, most of the individual jobs being of about 1000 to 1500 tons. General manufacturing demand for light structural material is active. Warehouses are taking steady shipments.

Awards Compared

	Tons
Awards this week	31,544
Awards last week	24,284
Awards two weeks ago	32,757
Awards this week in 1927	20,520
Average weekly awards, April	30,358
Average weekly awards, 1928	39,675
Total awards to date, 1927	719,083
Total awards to date, 1928	753,821

CONTRACTS PLACED

4500 tons, delivery at rate of 1500 tons a year, three steel frame buildings for Troy Cotton & Woolen Manufactory Inc., Fall River, Mass., in removing to Waycross, Ga., tentative contract to Ingalls Iron Works Co.

4300 tons, Pennsylvania and Lehigh Valley railroads bridge across Newark bay, N. J., in addition to 5500 tons previously noted placed, to Bethlehem Steel Co.

3500 tons, railroad bridge over Missouri Pacific railroad at Little Rock, Ark., to American Bridge Co.

3000 tons, involved in the following awards: 10-story apartment, 410 West Fifty-eighth street, New York,
Apartment, 720 Park avenue, New York,
6-story office, 162-10 Jamaica boulevard, Jamaica, Long Island, all to the Hay Foundry & Iron Works.

2000 tons, highway bridge, Sunbury, Pa., to Bethlehem Steel Co.

1700 tons, Baltimore & Ohio lift bridge over the Chicago river, Chicago, to American Bridge Co.

1500 tons, silk mill, Lewiston, Pa., to the McClintic-Marshall Co.

1200 tons, plant building for Chrysler Motor Corp., Detroit, to Russell Wheel & Foundry Co.

1040 tons, Pennsylvania railroad bridges, as follows: 270 tons, Manayunk, Philadelphia, to Phoenix Bridge Co.; 265 tons, Charlotte avenue, Jersey City, N. J., on New York division, to McClintic-Marshall Co.; 275 tons, Washington, to Harris Structural Steel Co.; 165 tons, Camden Heights, Va., to Shoemaker Bridge Co., and 140 tons for Jersey City, N. J., to American Bridge Co.

1000 tons, plant for the Allegheny Steam Heating Co., Pittsburgh, to the Jones & Laughlin Steel Corp.

850 tons, bridge, Wilmington, Del., to Phoenix Bridge Co.

721 tons, Illinois bridgework; 200 tons to A. C. Woods Co., as previously reported, 321 tons to Milwaukee Bridge Co., and 100 tons to Illinois Steel Bridge Co.

625 tons, including 125 tons junior beams, Mark Twain hotel, Elmira, N. Y., through Lowman Construction Co., general contractor, to the Jones & Laughlin Steel Corp.

600 tons, coal tipple for Pittsburgh Coal Co.'s Champion operations, Steubenville pike, Allegheny county, Pa., to the John Eichleay Jr. Co. through Allen & Garcia Co., Chicago, engineers.

530 tons, Trap Rock plant, Orangeburgh, N. Y., to Bethlehem Fabricators Inc.

425 tons, warehouse for A. M. Castle & Co., Los Angeles, to Baker Iron Works.

360 tons, Twentieth Century market, Oakland, Calif., to Judson-Pacific Co.

300 tons, Masonic temple, Norwich, Conn., to Bethlehem Fabricators Inc.

300 tons, Pennsylvania railroad shops addition, Wilmington, Del., to Belmont Iron Works.

300 tons, shop for the Pennsylvania railroad, Wilmington, Del., to the Belmont Iron Works.

275 tons, section of pier 21, North river, New York, to the American Bridge Co.

260 tons, bridge on Benson-Douglas highway, Phoenix, Ariz., general contract to Charles & F. W. Steffgen, San Diego, Calif.

250 tons, plant addition for Russell Grader Mfg. Co., Minneapolis, to American Bridge Co.

220 tons, 12-story Medical Science building, Waco, Tex., through C. L. Shaw Co., general contractor, to Central Texas Iron Works, Waco, Tex.

220 tons, Deschutes waterway span, Olympia, Wash.; awarded by Northern Pacific railway, to unnamed Eastern interest.

200 tons, miscellaneous work including Telephone building, Steubenville, O., and building for the Waterworks at Beaver Falls, Pa., to the Pittsburgh Bridge & Iron Works.

200 tons, Kensington Trust building, Philadelphia, to Bethlehem Fabricators Inc.

200 tons, school at Eleventh and Thompson streets, Philadelphia, to McClintic-Marshall Co.
200 tons, Rose building addition, Cleveland, to Forest City Structural Steel Co.
200 tons, Pennsylvania railroad bridge, to the Bethlehem Steel Co.
184 tons, recreation building, Dayton, O., to Massillon Bridge & Structural Co.
180 tons, Villa Nova college building, Philadelphia, to Robinson Iron & Steel Co.
170 tons, addition St. Philomena's school, Pittsburgh, to the John Eichleay Jr. Co.
150 tons, state highway bridge, New Hampshire, to the Berlin Construction Co.
150 tons, Rhawn street bridge, Philadelphia, to Belmont Iron Works.
140 tons, Baptist church, Cleveland Heights, Cleveland, to T. H. Brooks Co.
125 tons, highway bridge, Trenton, N. J., to the American Bridge Co.
120 tons, state highway bridge, McKean county, Pa., to the McClintic-Marshall Co.
120 tons, state highway bridge, Flemington, N. J., to Phoenix Bridge Co.

CONTRACTS PENDING

16,000 tons, Teitjen warehouse, Eleventh to Thirteenth avenues, between Twenty-sixth and Twenty-seventh streets, New York; bids expected to be asked in relatively near future.
6000 tons, Western Union Telegraph Co. building, West Broadway and Thomas streets, New York; Marc Eidlitz is contractor in charge. Expected out shortly.
3000 tons, bridge over Lake Champlain, between Crow Point, N. Y., and Chimney Point, Vt.; American Bridge Co. low bidder.
3000 tons, Y. M. C. A., Philadelphia; general contract to Irwin & Leighton.
2500 tons, office, Syracuse, N. Y.; bids asked.
2500 tons, office, 35-41 Broad street, New York; specifications expected out shortly; the George A. Fuller Co. is contractor in charge.
1800 tons, office building for Patterson estate, La Salle street and Wacker drive, Chicago; bids in May 17.
1350 tons, Owyhee project, Nyassa, Oreg.; bids in June 7.
1200 tons, 17-story office building, 259 West Thirtieth street, New York.
1100 tons, building for the Wilkes-Barre Savings Co., Wilkes-Barre, Pa.
1100 tons, office building, Fourteenth and Franklin streets, Oakland, Calif.; bids being received.
800 tons, homeopathic hospital, Philadelphia.
600 tons, 300 tons each for Parkhurst Florian and Nathan Hale junior high schools, Cleveland; bids in.
600 tons, Sewickley Valley hospital, Sewickley, Pa.; bids extended until May 21.
600 tons, extension to billet mill of Interstate Iron & Steel Co., Chicago.
578 tons, Queets river bridge, Olympia, Wash., general contract to McGuire & Blakesly, Great Falls, Mont.
500 tons, bridge in South for the Southern railroad.
500 tons, fur warehouse in Twenty-eighth street, New York; previously noted as involving unstated tonnage.
500 tons, bridge for the Pennsylvania railroad.
500 tons, parochial school, Bleecker street, New York.
400 tons, St. Michaels high school, Chicago.
400 tons, highway bridge over Brazos river, Freeport, Tex.
350 tons, theater at Oil City, Pa.; bids close May 19.
325 tons, office building, 226 South Wabash street, Chicago.
300 to 400 tons, Farmer's bank, Mansfield, O.; bids asked.
300 tons, Sacred Heart school, Mt. Vernon, N. Y.
300 tons, bank at Clairton, Pa.; bids close May 18.
250 tons, highway bridges, Philadelphia.
250 tons, school, Eighty-seventh avenue and Foothill boulevard, Oakland, Calif.; bids in.
250 tons, hospital, Great Barrington, Mass.; general contractor, H. R. Hampson Co., Pittsfield, Mass., $238,888.
225 tons, apartment, 906 North Bonnie Brae, Los Angeles; bids being received.
215 tons, dam and power house, Eugene, Oreg.; bids in June 4.
200 tons, addition to Robert Dollar building, San Francisco; bids to be taken soon.
200 tons, Granite Trust Co. building, Quincy, Mass.
155 tons, Mercantile building, North street, Boston.
100 tons, bridges for the Norfolk & Western railroad.

Concrete Bars

Eastern Activity Includes 3500-Ton Inquiry—Buying Maintains Seasonal Normal

ACTIVITY in the concrete reinforcing bar market is about normal for the season. A large quantity of roadwork is pending in some of the eastern districts, Buffalo being one of the most active. New inquiry is featured by a dock project in Brooklyn, N. Y., to require 3500 tons of bars. Prices reflected no trend toward change in the past week.

REINFORCING BAR PRICES, PAGE 1299

New York, May 15.—More activity is reflected in the concrete reinforcing bar market here and six projects which had been placed during the past week involve more than 1600 tons. A number of important tonnages are up for early action. The largest job to come up here in a long time is a new building of the New York Dock Co., Brooklyn, involving 3500 tons of bars, on which the architect now is taking bids from general contractors. The Turner Construction Co. has the contract for the Ansco building, Binghamton, N. Y., involving 500 tons of bars.

Boston, May 15.—About 200 tons of reinforcing steel, in small lots, was disposed of in the past week. The best job to develop in the last few days is a new building for the New England Telephone Co., to be erected at Worcester, Mass., requiring 400 tons.

Buffalo, May 15.—More than 1250 tons of new reinforcing bar and welded mesh inquiry is listed in Buffalo and nearby territory this week. Several road projects for which contracts have been placed in this district involve more than 750 tons of mesh. Large lots of concrete bars shipped direct from steelworks have been placed as low as 2.00c, Buffalo, while truck delivery tonnage is quoted around 2.40c. Operations of mesh departments and reinforcing bar mills has been increased to keep pace with demand.

Pittsburgh, May 15.—Much work involving reinforcing bars, bar joists, etc., is up in the Pittsburgh area, but owners seem loath to close. A vast number of jobs involving 50 tons or less are up for bids. Contractors are numerous on the larger jobs; for instance, 36 different bidders are endeavoring to obtain the Sewickley Valley hospital contract, the bidding time on which has been extended until May 21. Prices on the billet bars are unchanged at 1.85c to 1.90c.

Cleveland, May 15.—Inquiries issued by the Cleveland Union Terminals Co. for superstructures of a building group feature the concrete bar market. Estimates place the amount required as upward of 3000 tons. Awards and inquiries during the week were few. New billet bar prices continue 1.85c to 1.90c, Pittsburgh, or 1.80c to 1.90c, Cleveland mill, depending upon the tonnage involved.

Chicago, May 15.—Figures are out for buildings requiring about 10,000 tons of rail steel reinforcing bars and prospective billet bar work is estimated at 6000 to 8000 tons. Highway work continues to take important tonnages. Reinforcing bar fabricators are 80 to 85 per cent engaged, about the same as a year ago. Sharp competition for the larger tonnages of billet bars has brought out quotations as low as 2.10c. Rail steel bar sellers in this district announce a price advance to 2.00c, mill, minimum, and 2.30c, maximum, effective at once. Mills report heavy shipments of billet steel bars to warehouses.

Awards Compared

	Tons
Awards this week	5,150
Awards last week	11,061
Awards two weeks ago	4,290
Awards this week in 1927	3,290
Average weekly awards, April	10,522
Average weekly awards, 1928	7,836
Total awards to date, 1927	96,726
Total awards to date, 1928	148,887

CONTRACTS PLACED

750 tons, West side sewer, Chicago, to Truscon Steel Co.
700 tons, rail steel, apartment hotel on Oak street, Chicago, to Inland Steel Co.
500 tons, office building at 301 West Jackson boulevard, Chicago, to Kalman Steel Co.
350 tons, Villa Nova college building, Philadelphia, to Milton Mfg. Co.
350 tons, Central Railroad of New Jersey, terminal warehouse, Jersey City, N. J., to Concrete Steel Co., through White Construction Co.
335 tons, Spatz building, Sixtieth street, between Broadway and Columbus avenue, New York, to Jones & Laughlin Steel Corp., through Turner Construction Co.
300 tons, state roadwork, Newark, N. J., to Concrete Steel Co., through the contractor, John Heller.
300 tons, mesh, for state of New Hampshire, to Truscon Steel Co. and American Steel & Wire Co.
270 tons, Kittitas canal project, Yakima, Wash., to Pacific Coast Steel Co.
250 tons, New Jersey state roadwork in Monmouth and Mercer counties to Igoe Bros.
250 tons, subway section, 173rd street and St. Nicholas avenue, New York, to Concrete Steel Co., through Moranti & Raymond Inc.
250 tons, rail steel, Illinois road work, to Calumet Steel Co.
230 tons, subway section, Nassau and Broad streets, New York, to Concrete Steel Co.
180 tons, school buildings, one at Aurora, Ill., and another at Hinsdale, Ill., to Concrete Engineering Co.

135 tons, Newtown Creek subway section, Brooklyn, N. Y., to Concrete Steel Co. through Mid-Eastern Contracting Co.

CONTRACTS PENDING

3500 tons, New York Dock Co. building, Brooklyn, N. Y.; bids on general contract being taken by Russell G. Cory, architect.
3000 tons, approximate, superstructure for medical arts, mercantile and garage units, Cleveland Union Terminals Co., Cleveland; bids asked.
1000 tons, hotel on Walton place, Chicago; Levy & Klein, Chicago, architects.
700 tons, subway, route 109, section 2-A, Brooklyn, N. Y.; general contract to Rodgers & Hagerty Inc.
500 tons, platform and track construction, new Union station, Buffalo. John Johnson, contractor.
500 tons, Ansco building, Binghamton, N. Y.; general contractor, Turner Construction Co.
450 tons, dam and power house, Eugene, Oreg.; bids in June 4.
432 tons, Brashear reservoir, Northside, Pittsburgh; general contract awarded the Bucanelly Construction Co., Pittsburgh.
400 tons, Chicago Motor club building, Chicago.
400 tons, new building for New England Telephone Co., Worcester, Mass.
370 tons, Owyhee project, Nyassa, Oreg.; bids in June 7.
250 tons, West unit addition, Pittsburgh Parking Garages Inc., Pittsburgh; Mellon-Stuart Co., general contractor.
246 tons, including 130 tons of bar joists, Clark office building, East Liberty, Pittsburgh; bids being asked.
240 tons, mesh, for Dunkirk-Silver Creek, N. Y. highway; Peter De Perro, Buffalo contractor.
215 tons, mesh, for Dundee-Halls Corners, N. Y., road; Parlor City Construction Co., Binghamton, N. Y., contractor.
200 tons, state highway, route 31, between Bartley and Chester, N. J., general contract to Liddle and Pfieiffer, Perth Amboy, N. J.
200 tons, bars, bar joists, slabs, etc., Pennsylvania railroad improvements, Pittsburgh; bids about to be asked.
200 tons, building for University of Illinois, Urbana, Ill.
200 tons, Stimson building, Seattle; bids being received.
195 tons, mesh, Franham-Evans Center, N. Y., highway; Stappell, Mumm & Beals Co., Hamburg, N. Y., contractor.
185 tons, including 75 tons bar joists, Sewickley Valley general hospital, Pittsburgh; bidding time extended until May 21.
155 tons, mesh, for Big Creek-Kanona, N. Y., road; Harry W. Patterson, Hornell, N. Y., contractor.
140 tons, Kettle Falls and Queets river bridges; general contracts awarded.

Refractories

Production about 50 per cent and Buying Is Small

REFRACTORIES PRICES, PAGE 1300

Pittsburgh, May 15.—Individual orders for refractories are small and the aggregate is only sufficient to maintain 50 to 55 per cent average kiln operation. Fire clay and silica brick are being bought only for prompt needs. As for two years past, the brickmaker and not the brick user carries the stock. Prices on No. 1 brick are firm but at times the second quality are subject to severe competition. No start has been made against third quarter or last half contracts. By-product coke ovens for the Sharpsville Furnace Co., in connection with its recently purchased Neville Island blast furnace, are among new projects refractory producers are watching. It is understood an additional blast furnace for the Jones & Laughlin Steel Corp. at Woodlawn, Pa., is being planned.

Rails, Cars

Current Buying in Railroad Market Dull—Rails and Track Accessories Moderately Active

BUYING of rails and track accessories is only moderately active, standard rail sales of the week totaling about 2000 tons in the Chicago district. Mills there look forward to a secondary buying movement within the next 60 days. Cars are moving in small quantities, the largest order of the week being under 100 cars. April awards totaled 5783 cars. Erie closed on 35 locomotives.

RAILROAD TRACK PRICES, PAGE 1300

New York, May 15.—With a total of 5783 cars for April, freight car orders placed by domestic lines for the first four months of this year aggregated 22,343 cars. This is a drop for the 4-month period of 6957 cars from the corresponding period in 1927 and a decline of 12,802 cars from the corresponding period in the year before. The present total, however, is 5348 cars better than for the first four months in 1925. The total for April is the second highest this year. Further comparisons follow:

	1928	1927	1926	1925
Jan.	3,900	14,710	8,830	1,695
Feb.	9,962	5,960	12,895	5,510
March	2,698	4,955	8,895	4,730
April	5,783	3,675	4,615	5,060
Total (4 mos.)	22,343	29,300	35,235	16,995
May	.....	5,425	4,448	6,985
June	.....	7,440	4,285	1,835
July	.....	2,295	1,265	800
Aug.	.....	1,181	152	2,875
Sept.	.....	682	3,335	7,905
Oct.	.....	886	2,840	11,145
Nov.	.....	1,189	3,925	11,685
Dec.	.....	14,897	8,990	16,885
Total	.....	64,042	60,575	77,110

Current car demand continues relatively light, with most sellers of the opinion that this month's figure will fall far under that of April. Erie railroad has ordered 35 locomotives from Baldwin Locomotive Works.

Pittsburgh, May 15.—Several coal companies operating in the western Pennsylvania bituminous field are ordering light rails. Single carload orders come periodically at $36. In West Virginia, eastern Kentucky and other sections, most of the orders are going to the rerollers about $2 less.

Track and accessory manufacturers are operating fairly well. Replacements are not numerous, new inquiries and new orders being few. Specifications of track accessories against contracts by steam railroads are fairly active and the aggregate for the month possibly will be ahead of April. Prices are firm.

Chicago, May 15.—Secondary rail buying is developing slowly. Some indications are seen that railroads will be sparing in their optional purchases of rails this year, but one rail mill expects a more spirited buying activity within the next 30 to 60 days. Small miscellaneous orders for standard steel rails during the week totaled 2000 to 3000 tons. Only a few carloads of light rails have been sold. Rail mill operations are continuing about 90 per cent for the district. Departments producing track fastenings are engaged almost fully. Rail mill activity during the primary and secondary buying movements of this year and the latter part of 1927 has been sustained remarkably well.

Sales of track accessories during the week amounted to about 3000 tons. Considerable inquiry is out for track fastenings but this is in small lots.

No major car inquiries are in sight. Some doubt is expressed here as to whether carriers are contemplating any important purchases of cars for the autumn grain movement. Chicago & North Western, which recently ordered 300 additional general service cars, has put out an inquiry for 200 flat cars and 250 stock cars.

CAR ORDERS PLACED

Chicago, Burlington & Quincy, ten gasoline-electric rail motor cars, to the Pullman Car & Mfg. Corp.; cars are to be equipped with Electro-Motive power units.
Chicago Great Western, one gasoline-electric car power unit, to the Electro-Motive Co.
Interborough Rapid Transit Co., 23 trucks for subway cars, to the American Car & Foundry Co.
Lehigh & Hudson River, one gasoline-electric rail motor car, to the J. G. Brill Co.
Seaboard Air Line, conversion of 500 flat bottom gondola cars into drop bottom cars, to own shops.

LOCOMOTIVE ORDERS PLACED

Erie railroad, 35 locomotives, to Baldwin Locomotive Works.

CAR ORDERS PENDING

Chicago & North Western, 200 flat cars and 250 stock cars.
Iquique a Pintados, Chile, ten air dump cars; bids asked.
Northern Pacific, one to seven gasoline-electric rail passenger and baggage cars.
Virginian railway, 1000 hopper car bodies and contract for rebuilding trucks, to Virginia Bridge & Iron Co.
Wheeling Steel Corp., 20 hoppers and 10 gondolas; bids asked.

Morris Named President

A. F. Morris, in charge of sales of Morgan Engineering Co., Alliance, O., for the past 25 years, and a vice president of the company since 1923, has been elected president. Mr. Morris became associated with the Morgan company shortly after leaving school,

Wire

Demand on Jobber Stocks Brings Better Mill Orders—Nail Weakness Continues

GENERALLY good demand continues for wire and wire products, though nail weakness has not ceased. Weather conditions and farm work have improved demand on jobbers. Reports of nail shading develop little real cutting, but prices lack strength at existing levels. On wire and wire products prices show no yielding. Production and shipments are well balanced.

WIRE PRICES, PAGE 1300

Chicago, May 15.—Wire mills report a number of good replacement orders from jobbers during the week, and warehouses are moving a heavier volume. Demand for nails continues weak. With the beginning of spring farm work, sales of woven fencing and barbed wire are expected to taper. Jobber activity in the Northwest is showing marked improvement. Wire nails are being quoted freely at $2.60 and $2.65, Chicago or western mills.

Worcester, Mass., May 15.—Demand for plain steel wire and wire specialties continues steady with prices firm at 2.65c, Worcester. Specifications continue to improve and a feature is diversity of buying and steadiness in call for manufacturers' wire. Shipments and production appear to be well balanced and mill stocks in most instances are about even. Demand has held up well despite heavy commitments placed some weeks ago.

Pittsburgh, May 15.—Wire and wire nail manufacturers are enjoying a better demand, and improved weather conditions generally help greatly in a more rapid turnover of jobbers' stocks. The latter have placed repeat orders within the past week in greater number, and on these $2.65 nail base has applied. In reports of concessions some producers find that buyers tell only part of the story. Statement is made that first quarter contracts were extended through second quarter, allowing the salesmen to think the extension was at first quarter figure, while in fact, the new base figures were incorporated. Some makers made no such extensions, to avoid this contingency, writing new contracts at the new base figures. Reports from agricultural implement makers are favorable, and the turnover in farm supplies is much better. Wire mill operations, however, continue to average slightly higher than 50 per cent.

Buffalo, May 15.—Buffalo wire works are operating at slightly more than 80 per cent of capacity. Fence and welded mesh departments are busy, with other units operating fairly well. Specifications on wire contracts for the automotive trade are good. Wire prices are reported steady.

Cleveland, May 15.—Strengthening of the price situation on wire and nails in the Cleveland territory has become more marked. Although in the southern section of Ohio shading continues to $2.55 per 100-pound keg on wire nails, $2.60 is more representative of the market. Locally $2.65 is firm. Plain wire is steady at 2.50c. Demand continues good although confined mostly to releases on contracts.

Cold Finished Steel

Slack Automotive Buying Causes Tonnage to Drop Off

COLD FINISHED PRICES, PAGE 1299

Pittsburgh, May 15.—Tonnage is dropping off somewhat in cold finished bars, attributed to slack automotive buying The Ford Motor Co. continues to specify freely. Miscellaneous manufacturing lines take small individual lots of cold finished bars but with automotive demand support a 60 to 65 per cent operating average among the cold finishing mills. No start has been made on third quarter contracting. Makers here claim 2.20c is holding.

Cleveland, May 15.—Specifications for cold drawn bar steel are unchanged from the rate of the preceding several weeks. Demand from screw machine products manufacturers continues fair. Tonnage traceable to automotive consumption also is good, but several inquiries expected from the Detroit district have not materialized. Prices are firm at 2.25c, Cleveland, for all tonnage moving.

Strip Steel

May Tonnage Much in Excess of April—General Buying Active

STRIP PRICES, PAGE 1300

Pittsburgh, May 15.—The position of several strip steel makers is vastly improved over April. Shipments in some cases exceed April by 25 per cent. Prices on hot strips still are unsatisfactory, competition being exceedingly keen. Cold strip makers, however, look upon 3.00c to 3.15c, base, as more stabilized than ever. The automotive tonnage is dropping off in some directions although the Ford Motor Co. and General Motors Corp. still are ordering freely against increasing output of new models. The strip industry here is on a 75 to 85 per cent operating basis. Some prices as high as 2.30c have been obtained on narrow hot strips under 3 inches. Other manufacturers have gone as low as 2.20c. Around 2.00c to 2.10c are obtained on 3 to 6 inches, while 1.90c applies on 6 to 12-inch material. Plate and blue annealed sheet makers' competition is being met on hot strips wider than 12 inches.

Cleveland, May 15.—Hot-rolled strip steel prices seem to have reached the present bottom at 1.75c, Pittsburgh, for 6 to 12-inch widths. No business was up for quotation during the week, several of the leading sellers report. Specifications against contracts were at a lighter rate than in any week this quarter. Cold finished strip seems steady at 2.75c, Cleveland, although sales of carloads have been made in the past few days up to 2.90c, indicating a tendency to strengthen the market.

Chicago, May 15.—Following the recent slump in sales of hot rolled strip steel, demand from automotive lines has picked up. Operations continue at 85 to 90 per cent. The price for hot rolled strip continues to show some softness. Mills in this territory usually are naming one price instead of a range. The quotation for material under 3 inches is a flat 2.30c; 3 to 6 inches 2.20c; and 6 to 12 inches 2.00c, Chicago. For material 12 to 24 inches in width a price of 2.10c, blue annealed sheet basis, is named.

Quotations for cold rolled strip steel are more steady at 2.75c to 2.90c, Cleveland, in quantities over three tons, and 3.00c to 3.15c, Pittsburgh-Cleveland, for lots under three tons.

Pittsburgh Operations at 80 per Cent

Pittsburgh, May 15.—Operations among steel ingot producers in this territory are on a basis of approximately 80 per cent of capacity. Large producers like the Carnegie Steel Co., Jones & Laughlin Steel Corp., Bethlehem Steel Corp., and others manage to keep 80 to 85 per cent of their open hearth and bessemer equipment active. Smaller producers are running as low as 50 to 75 per cent. Some companies are understood to be starting to stock up ingots to a certain extent against coming hot weather. Others state that their operations are controlled by their finishing departments and these being only on a 50 per cent basis, dictate a similar rate for the ingot making departments.

Republic's Directors To Meet in Youngstown

Youngstown, O., May 15.—Directors of the Republic Iron & Steel Co. will hold their next regular meeting at the company's offices in this city. This is the first time such a meeting was held here, and President E. T. McCleary is quoted as saying they will continue to be held in Youngstown.

Nonferrous Metals

Upturn in Copper Is Followed by Advance in Prices Quoted on Wire and Brass Products—Zinc Selling Above 6.00c, East St. Louis

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York July	Lead—New York	Lead—East St. Louis	Zinc—St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
May 9	14.25	14.37½	14.00	51.75	51.55	6.10	6.00	6.00	23.90	11.25	35.00
May 10	14.25	14.37½	14.00	51.92½	51.62½	6.10	6.00	6.00	23.90	11.37½	35.00
May 11	14.25	14.37½	14.00	51.75	51.25	6.10	6.00	6.00	23.90	11.20	35.00
May 14	14.37½	14.50	14.00	52.12½	51.37½	6.10	6.00	6.05	23.90	11.12½	35.00
May 15	14.37½	14.50	14.05	52.50	51.75	6.10	6.00	6.05	23.90	11.12½	35.00

NEW YORK, May 15.—Copper statistics showing the smallest stocks since the war, have held the center of the metal stage in the past few days. Prices of the metal have gone up ⅛-cent, with previous good buying as an aid to the figures. Record-breaking exports were the principal cause of the cut in stocks.

Zinc statistics came out a few days before the copper figures, showing domestic shipments the largest ever done in April, with total domestic and export trade the largest for the first four months of any year. On the other hand shipments were not quite so large as in March, with the result that steady output put stocks up a little to the highest in the past few years. Zinc prices continue to rise, but factors like curtailed Joplin ore output and cartel negotiations abroad, have more to do with the price than the statistics.

Lead statistics showed little change in stocks in April, after March figures had gone unusually high, but output was cut to the lowest in several years. There has been talk of the need of curtailment and this is the first real move. Prices of lead and of other metals changed little in the past week. Business also has been quiet except in copper.

Copper wire prices were raised ⅛-cent. Some good buying was done just before the rise and more is expected. Brass products prices were advanced ¼-cent but copper products with the exception of seamless tubing hold unchanged.

Copper—Electrolytic sold Monday on the basis of 14.37½c, Connecticut. It had been on or near 14.25c since early in December. Large buying was done just a few days before the rise for domestic shipment, a little for May, much for June and some for July. Export business continued active at 14.50c c.i.f. European ports, with some days unusually high. April statistics showed refined stocks of 72,893 tons, cut over 14,000 tons in the month, and total stocks of 308,000 tons, cut over 21,000. Exports were nearly 65,000 tons and domestic shipments 72,234.

Zinc—Prime western has sold above 6.00c, East St. Louis. Business has not been large but many conditions have been favorable to the market. Good May business was done about a week ago. Stocks at the end of April were 44,759 tons, after shipment of 46,517 to domestic users and 3746 export.

Tin—Buying by users has been light and this fact has bothered the market, though consumption continues large. Spot metal is tightly held and the premium increased. The market has been fluctuating without any decided tendency. Supplies continue large, with talk about hidden metal.

Lead—Buying has been light but there is evidence that demand is about to become more active. Prices have held unusually steady.

Aluminum—Shipments are active and prices are firm but unchanged.

Mill Products

Base prices cents per pound f.o.b. mill

SHEETS	
Yellow brass (high)	19.00
Copper, hot rolled	23.00
Lead, full sheets (cut ¼c more)	9.75
Zinc (100-pound base)	9.00
Aluminum, flat sheets, up to 10 gage, 3" to 72" wide	31.30
SEAMLESS TUBES	
Yellow brass (high)	23.87½
Copper	24.75
RODS	
Yellow brass (high, full turning)	16.75
Naval brass	19.50
WIRE	
Copper, car lots	15.87½
Yellow brass (high)	19.50

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.25
Chicago	9.25 to 9.50
Cleveland	10.00
HEAVY YELLOW BRASS	
Chicago	6.75 to 7.00
Cleveland	7.50
ZINC	
New York	3.50
Cleveland	3.25
HEAVY COPPER AND WIRE	
New York	11.50 to 11.75
Boston	11.25 to 11.75
Chicago	10.75 to 11.00
Cleveland	11.50
RED BRASS BORINGS	
New York	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	7.50
LIGHT COPPER	
New York	10.00 to 10.25
Chicago	9.50 to 9.75
Cleveland	10.25
LIGHT BRASS	
Boston	5.75 to 6.00
Chicago	6.25 to 6.50
Cleveland	5.50
ALUMINUM	
Clippings, Cleveland	17.50
Borings, Cleveland	9.50
Cast, Cleveland	12.75
Cast, Boston	11.50 to 12.00

Secondary Metals

Remelt Aluminum No. 12	16.50 to 17.00
Brass ingot, 85-5-5-5	12.25 to 12.50

Coke By-Products

Benzols Active and Advance Expected —Sulphate Seasonally Weak

New York, May 15.—Demand for toluol continues heavy with leading sellers virtually out of the market until June 1. Benzols are moving well, and this demand, with a rising tendency in gasoline, is having a stimulating effect on prices, with some sellers looking for a slight advance. At present, all distillate prices are steady.

Solvent naphtha and commercial xylol are moving in steady, but restricted volume. Plenty of material appears available, with prices easy at around 30 cents, works, for material in tanks and 35 cents, in drums. Phenol is around 17 cents, works, in tanks.

Seasonal weakness is developing in sulphate of ammonia, with the market for domestic shipments at $2.30 to $2.35, delivered, as compared with a flat price of $2.35, recently. The market is now nearer the inside figure and is likely to go even lower before long term contracting gets under way. Most sellers look for little domestic activity before July, or possibly August. Contrasting with conditions a week or two ago, export buying of sulphate of ammonia is now quiet with the market holding nominally at $2.20, port, for material in double bags.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contracts
Pure benzol	$0.22	.....
90 per cent benzol	0.22	.....
Toluol	0.35	.....
Solvent naphtha	0.30	.....
Commercial xylol	0.30	.....
Phenol	0.17	.....
Per Pound at Producers' Plants		
Naphthalene flakes	0.05½ to 0.06½	
Naphthalene balls	0.06½ to 0.07½	
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.30	

Warehouse

Demand Spotty During Week, Reflecting Decreased Buying at Several Centers—Prices Generally Held at Quoted Levels

DEMAND for iron and steel products from jobbers is more spotty. Boston and St. Louis report decreased buying while New York indicates that demand continues good. Prices were held during the week at the quoted levels, several reductions at Los Angeles being one exception.

Because of the dullness in various lines, Boston warehouse interests continue to report moderate business generally. The most active interests feel that they are doing well to maintain prices pending a better development.

Quantity extras were applied by Philadelphia jobbers in the past week to hoops and bands. The base price on bands now is 3.25c, delivered locally while the base on hoops is 3.50c. To these are added bar quantity differentials and warehouse extras for size. The territory in which quantity extras on warehouse shipments now is effective includes Philadelphia, Delaware, Chester, Montgomery and Bucks counties in Pennsylvania and all of New Jersey south of Mercer county. The likelihood of quantity extras being applied to shapes and plates still appears indefinite.

Moderately good demand prevails in the New York metropolitan warehouse market. Black and galvanized sheets continue weak, but with prices unchanged at 3.80c and 4.50c in New York and Brooklyn and 4.00c and 4.70c in the Newark and Jersey City territories.

Sales of iron and steel by Buffalo warehouses fail to show the usual stimulation attending the arrival of good building weather. The number of individual orders is large but tonnages are small and business during the first half of May has fallen below expectations.

Demand for iron and steel products from Cleveland warehouses is not showing the seasonal improvement expected. Building materials especially are lagging behind normal spring volume. Sheets are not moving to tinsmiths, sheet metal fabricators, and repair users in expected quantities. Manufacturers are taking fair tonnages of cold drawn bar stock, tubing, and special sections.

This month has witnessed a further slowing down in the general St. Louis warehouse demand.

Out-of-stock prices in the Los Angeles district have been reduced as follows: Reinforcing bars, carloads, from 3.05c to 2.65c and on less carloads shipments from 3.30c to 3.00c. Bands have been reduced from 4.25c to 4.15c.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York† ††	3.20c to 3.25c
Philadelphia*	2.50c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.06c

IRON BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York†	2.80c to 3.24c
Philadelphia*	2.50c
St. Louis	3.15c
Tulsa	3.75c to 4.06c

REINFORCING BARS

Baltimore	2.80c to 3.31c
Boston	3.265c to 3.50c
Buffalo	2.75c
Cincinnati	3.15c
Cleveland	2.20c
Detroit	3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	2.65c
Los Angeles lcl.	3.00c
New York	2.95c to 3.10c
Philadelphia	2.30c to 2.80c
Pittsburgh	2.90c to 3.175c
San Francisco cl.	2.85c
San Francisco lcl.	3.10c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.25c
Houston	3.25c
Los Angeles	3.30c
New York†	3.25c to 3.30c
Philadelphia	2.40c to 2.80c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

PLATES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York†	3.25c to 3.30c
New York† (floor)	5.05c to 5.10c
Philadelphia	2.40c to 2.80c
Phila., 3/16-in.	2.60c to 3.00c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

No. 10 BLUE ANNEALED

Baltimore	3.45c
Boston, 3/16-in.	3.915c
Buffalo	3.70c
Chicago, to 40 in.	3.50c
Chicago, over 40 in.	3.60c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.50c
Ft. Worth	4.70c
Houston	3.90c
Los Angeles	4.00c
New York	3.90c
Portland	4.00c
Philadelphia	3.15c
Pittsburgh**	3.00c to 3.10c
San Francisco	3.75c
Seattle	4.00c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.20c to 4.56c

No. 24 BLACK SHEETS

Baltimore	3.60c to 4.00c
Boston	5.00c
Buffalo	4.20c
Chicago	3.95c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	4.10c
Ft. Worth	4.70c
Los Angeles	5.10c
New York	3.80c
Philadelphia*†	4.00c
Pittsburgh‡	3.65c
Portland	4.90c
San Francisco	4.95c
Seattle	5.00c
St. Louis	4.45c
St. Paul	3.95c
Tulsa	4.75c

No. 24 GALVANIZED SHEETS

Baltimore	4.30c to 4.75c
Boston	5.85c
Buffalo	5.05c
Chicago	4.80c
Cincinnati	4.90c
Cleveland	4.50c
Detroit	4.90c
Ft. Worth	5.75c
Houston	5.30c
Los Angeles	5.50c
New York	4.50c
Philadelphia*†	4.75c
Pittsburgh‡	4.50c
Portland	5.65c
San Francisco	5.50c
Seattle	5.75c
St. Louis	5.25c
St. Paul	4.90c
Tulsa	5.55c

BANDS

Baltimore	3.85c
Boston	4.015c to 5.00c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.65c
Ft. Worth	4.40c
Houston	3.65c
Los Angeles	4.15c
New York†	4.00c
Philadelphia*	3.25c
Pittsburgh	3.60c
Portland	4.00c
San Francisco	4.00c
Seattle	4.00c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	4.15c
Cincinnati	4.40c
Cleveland	3.65c
Detroit	4.15c
New York†	4.50c
Philadelphia*	3.50c
Pittsburgh	4.50c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds, hexagons,	Flats, squares
Baltimore	3.35c	3.85c
Boston	3.45c	3.95c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.40c	3.90c
Philadelphia	3.35c	3.85c
Pittsburgh	3.60c	4.10c
Portland (a)	5.00c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.66c	5.16c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.00c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	14.00c
Iron bars, rounds	6.25c
Flats and Squares	
Baltimore, New York, Phila.	6.60c

*Plus quantity differentials. †Minus quantity differentials. ††Domestic bars. ‡10 to 24 bundles. **25 or more sheets. *†50 or more bundles.

Coast Business Active

Few Large Tonnages Placed but Small Lots Aggregate Well—Much Is Pending

SAN FRANCISCO, May 12.—(*By Air Mail*)—Although awards of iron and steel products this week were not heavy some good sized tonnages of structural shapes, plates and cast iron pipe are now up for figures. Among the more important lettings were 425 tons of shapes for a new warehouse in Los Angeles for A. M. Castle Co., booked by the Baker Iron Works.

Importations of foreign material on the Pacific coast during February for the major items were as follows:

	—February—	
	1928	1927
Cast iron pipe (tons)	1,843	4,583
Tubular products	1,343	1,503
Shapes	2,996	1,044
Bars	4,032	1,612
Coke	3,176	2,560
Pig iron, ore and concentrates	36,596	640

Pig Iron and Coke

Sales and inquiries for foundry iron and coke were confined to small lots and little improvement is noted in the rate of operations. No change in prices has occurred.

Bars, Plates and Shapes

A number of small awards of reinforcing bars brought the total for the week to 800 tons. So far this year 41,678 tons have been booked, compared with 18,113 tons for the corresponding period last year.

No award on the 8000-ton Wildcat and Sequoia aqueducts at Oakland has been made. It is possible that instead of using welding steel pipe the district may buy steel lined concrete pipe. Awards this week aggregated 547 tons, bringing the total for the year to 12,801 tons, compared with 42,211 tons for the same period in 1927. The Chicago Bridge & Iron Works booked 400 tons for six tanks for various cities in the Pacific Northwest. The Standard Oil Co., San Francisco, placed 150 tons with an unnamed eastern producer. Bids are being taken on 700 tons for a carfloat for the Western Pacific railroad at San Francisco and bids have been opened on 650 tons for a dredger and two steel scows for the state harbor commission at San Francisco. Prices are firm at 2.30c c.i.f.

Structural shape demand is improving and awards this week aggregated 1480 tons and brought the total for the year to 59,356 tons, compared with 72,668 tons for the corresponding period last year. The Judson-Pacific Co. took 360 tons for a market building in Oakland. New inquiries exceed 2000 tons, bringing the total pending business to 16,000 tons. Important new projects include 1100 tons for an office building in Oakland. Plain material is firm at 2.35c c.i.f.

Other Finished Material

While only one award in excess of 100 tons of cast iron pipe was reported this week a number of new inquiries have come out. Awards to date this year now total 34,363 tons, compared with 40,704 for the same period in 1927. Bids were rejected by Los Angeles on 234 tons of 24-inch pipe. Bids were opened this week on 1665 tons and 417 tons respectively for Los Angeles and Pasadena. Puyallup, Wash., has inquired for 150 tons. The United States Cast Iron Pipe & Foundry Co. was low on 1800 tons for an outfall sewer in Los Angeles. Total pending business aggregates 40,142 tons, including over 30,000 tons for the Wildcat and Sequoia aqueducts at Oakland.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	24.00 to 25.00
*Dutch	24.50

*C.i.f. duty paid.

Foundry activity is better distributed and conditions as a whole are improved. There is not much buying however, as plants are reasonably well stocked. Purchases have been confined to small tonnages of Columbia for quick delivery. Victoria and Tyneside coke is quoted at $13 but a special consigment of German coke of inferior quality has been disposed of here at $12.25.

Bars, Plates and Shapes

Mill prices are unchanged, merchant bars and shapes 2.35c and plates firm at 2.30c. Local steel mills are operating steadily with a large number of small orders but the aggregate representing considerable tonnage. No large tonnages of reinforcing are pending, the only contract over 100 tons reported this week being 272 tons for the Kittitas dam, awarded to the Pacific Coast Steel Co. by the interior department.

Bids for the largest tonnage of plates called for in several months will be received at Tacoma May 14 for 7540 feet of 63-inch smooth bore or 66-inch riveted and 7010 feet of 51-inch steel pipe involving 2100 tons of plates. Birchfield Boiler Works has just booked a contract for furnishing Tacoma with 1139 feet of 48-inch steel pipe, involving 100 tons.

About 1700 tons of structurals are pending for the Kettle Falls and Queets river bridges, 1125 tons for the former and 550 tons for the latter, general contracts having been awarded.

Seattle Buys Much

Large Lumbering Plant Takes Machinery—Other Projects Active

Seattle, May 9.—Foundries, fabricating plants and steel mills report increased operations and conditions are quite active. The jobbing trade has also improved. Prices are firm and the volume of business is better than a month ago.

Officials of the Weyerhaeuser Timber Co. have placed additional orders for machinery and equipment for its new lumber plants at Longview, Wash., and Klamath Falls, Oreg. This is said to be the largest ever awarded in the Pacific Northwest and is reported to total about 50 carloads. Filer & Stowell, Milwaukee, have the order for 12 complete bandsaws. Twelve 800-horsepower boilers were ordered from the Erie City Iron Works, Erie, Pa. Lewis & Watts, engineers, Seattle, will construct two concrete smokestacks 257 feet high and 15 feet in diameter at the top. Sumner Iron Works, Everett, Prescott Iron Works, Seattle, and other foundry plants in this district have the contracts for transmission machinery, carriers and other equipment. Diamond Iron Works, Minneapolis, also received a large contract.

Newton Steel Co. Makes Promotions

Youngstown, O., May 15.—The Newton Steel Co. has made the following announcement of a series of promotions among its executives and sales departments:

C. B. Pollock has been elected vice president in charge of operations; C. H. Butts has been appointed assistant to President Edward F. Clark; R. M. Laning has been named general superintendent; and Howard E. Robinson now is general manager of sales.

Mr. Pollock formerly was general manager of the Newton Falls mills, coming to Newton Steel years ago from the Cambridge, O., works of the American Sheet & Tin Plate Co. Mr. Butts was the company's metallurgist and director of research and had established the company's laboratory. Mr. Laning originally came to Newton Steel from the Woods works of the American Sheet & Tin Plate Co. at McKeesport, Pa. Mr. Robinson had been assistant general manager of sales, coming to Newton Steel when the plant first was established eight years ago from the Allegheny Steel Co.

Sheet Sales and Output Decrease in April

Following heavy second quarter sheet bookings in March, April sales as reported by members of the National Association of Sheet and Tin Plate Manufacturers dropped 115,371 tons from the March total. Production and shipments were on a slightly lower basis than March, and while production was only about 10,000 tons below the monthly average for the first quarter, shipments were approximately that much above the average monthly shipments for that period. Production amounted to 327,909 tons in April, as compared with 366,127 tons in March and as against 337,744 tons, the monthly average for the first quarter. April shipments aggregated 327,674 tons, as against 359,532 tons in March, and these figures compares with 310,693 tons, the monthly average shipments for the first quarter. A full comparative table follows:

	—April—		—March—	
	Net tons	Per cent capacity	Net tons	Per cent capacity
Sales	284,070	84.7	399,441	112.4
Production	327,909	97.8	366,127	103.0
Shipments	327,674	97.7	359,532	101.0
Unfilled tonnage April 1, May 1	571,761	170.4	675,196	189.9
Stocks awaiting shipment	109,200	32.6	110,702	31.1
Stocks, unsold	53,853	16.0	53,144	15.0

The total number of hot mills in the United States at present is 721. These have a total capacity for April of approximately 464,422 tons, and the percentage of the capacity to which the figures above are related to 72.2 per cent.

A table of sales, production and shipments by months follows:

	Sales	Production	Shipments
January, 1927	261,357	256,856	239,019
February	241,951	282,171	261,412
March	345,900	359,340	338,436
April	292,965	316,100	300,858
May	212,337	309,360	302,759
June	224,321	300,706	281,395
July	230,715	287,243	252,034
August	177,647	266,645	266,713
September	258,427	220,919	230,443
October	234,358	245,765	232,626
November	344,519	232,041	224,789
December	530,197	260,130	221,689
January, 1928	302,921	316,541	274,126
February	266,210	330,565	298,420
March	399,441	366,127	359,532
April	284,070	327,909	327,674

Celite Buys the National Magnesia Company

Celite Co. of Los Angeles has purchased the plant and property of the National Magnesia Mfg. Co., Redwood City, Calif., about 25 miles south of San Francisco. The business will be continued under the name of the National Magnesia Co. Both companies were formed in 1912. The manufacturing plant of the Celite company is at White Hills, Calif., and is devoted to the manufacture of diatomaceous earth products of various kinds. The plant at Redwood City is devoted to the manufacture of magnesia, asbestos and diatomaceous earth insulating materials.

Bearing Metal Maker To Add to Capacity

Williams Alloy Products Co., Elyria, O., manufacturer of a special bearing alloy for automotive and industrial uses, E. M. Williams, president, is planning improvements to its plant to increase output and give better operating conditions. Included in the additions will be a 15,000-ton metal melting furnace.

This company has been increasing its production and strengthening its position for some time and now finds it necessary to expand to meet demands.

Slight Decline in Valley Steel Operations

Youngstown, O., May 15.—A slight decline in the rate of district steelworks operations is reflected in the open-hearth activities, 35 being active out of 57 independent units, against 37 last week. Bar mill operations with the independents is 50 per cent and with the Carnegie Steel 75 per cent. With 92 independent sheet units active out of 127, this is a drop of three. Tube mill operations include 15 units out of 20 welded and seamless units, this 75 per cent rate being equal to last year's record. Tin plate output is slightly higher and strip activity is again at capacity.

Chicago Operations Are Close to 95 per Cent

Chicago, May 15.—A slight dip in steel mill operations in the Chicago district is noted. Twenty of the 36 steelworks furnaces are in operation as against 21 furnaces three weeks ago. Illinois Steel Co. has taken off one of its nine furnaces at South Chicago and has added the new 900-ton No. 12 furnace at Gary. This makes the total unchanged, with 11 furnaces operating at Gary, eight at South Chicago, and one at Joliet, or 20 of that interest's 27 furnaces active. The operating rate is estimated to be slightly under 95 per cent.

Valley Pig Iron Is Easier

(*Concluded from Page* 1301)

in the week, at $16, base, Birmingham. Others report sales of 250 to 800 tons in small lots.

St. Louis, May 15.—Pig iron sales are small, the total in the past week being about 4000 tons. The largest single purchase was 1000 tons of malleable by a nearby Illinois user. A Granite City specialty maker took 800 tons, 300 tons went to a Bloomington, Ill., plant, and 500 tons of southern iron was taken by a local jobbing plant. Generally malleable shops report more activity since May 1 than earlier in the year. Shipments by the leading local blast furnace interest during the past two weeks have been slightly better than the April rate, which was the highest this year. The leading local producer still quotes $19 to $19.50, base, for immediate and third quarter shipment. Southern iron is freely offered on a basis of $16, Birmingham. Offerings of northern iron figure back to $18.50, Chicago furnace.

Birmingham, Ala., May 15.—No change is noted in the pig iron market here. To verify sales at $16, base, Birmingham, one of the larger makers showed contracts today for 1500 tons at that base. The sales are in small lots. Furnace interests feel confident the market will continue steady.

Buffalo, May 15.—Pig iron inquiry increases. Several 500 to 1000-ton lots of foundry and malleable are wanted in the East. Buffalo furnaces will quote close to $16 on large lots for such shipment, but hold the Buffalo district delivery prices at $17 minimum for low silicon foundry and $17.50 for malleable. Melt of iron is reported increasing in this district and there is growing interest in third quarter iron. There are 12 furnaces in operation in the district with seven idle, including one being rebuilt.

Philadelphia, May 15.—The chief development in the pig iron market in the past week was the sale of 5000 tons of basic, making a total of nearly 50,000 tons of this grade booked in the past month. Basic now is $19 to $19.25, delivered, eastern Pennsylvania. Foundry demand is fair, comprised of moderate size lots. The $20, base, eastern Pennsylvania furnace price continues firm.

Committee To Codify Trade Policies

Lewis A. Jones, president, National Association of Purchasing Agents, has announced a committee from that organization to crystallize the sentiment of the conference on buying and selling policies held in New York May 2.

The committee is as follows, Mr. Lewis being chairman: Roger Babson, Babson's statistical organization, Wellesley Hills, Mass.; L. F. Boffey, editor, *The Purchasing Agent*, New York; T. W. Harris Jr., E. I. du Pont de Nemours & Co., Wilmington, Del.; W. A. Marshall, president, W. A. Marshall & Co., New York; W. W. Nichols, Allis-Chalmers Mfg. Co., New York; R. M. Roosevelt, vice president, Eagle Picher Lead Co., New York; A. L. Salt, president, Graybar Electric Co., New York; J. T. Smith, vice president, General Motor Corp., New York.

Hearing Begun on Lisbon Railroad Extension

Washington, May 15.—A hearing was begun Monday in connection with the application of the Pittsburgh, Lisbon & Western railroad to construct extensions to its line in Columbiana and Mahoning counties, O., and in Beaver county, Pa. The application of the Montour railroad to acquire control of the Pittsburgh, Lisbon & Western also was taken up. Notice was given by C. V. Burnside, representing the interstate commerce commission that the two cases would probably be disposed of in the same opinion.

W. E. Fowler, general superintendent, Montour railroad and H. J. German, of the Pittsburgh, Lisbon & Western were the only witnesses heard on the opening day. Their testimony was of technical character, Mr. Fowler discussing the engineering features of the extension of the Lisbon line, and Mr. German the expense of the extensions. Mr. Fowler stated that up to this time the road has acquired no right of way for the extension nor had it obtained any options.

Among the steel men attending the hearing were: For the Youngstown Sheet & Tube Co., L. A. Manchester, general counsel; J. C. Argetsinger, assistant general counsel; Frank Purnell, assistant president; A. J. Boehme, land tax agent; A. C. Graham, traffic manager. Others present included E. R. Griffith, traffic manager, Sharon Steel Hoop Co.; H. D. Rhodehouse, traffic manager, Youngstown chamber of commerce; Albert Ward, Pittsburgh & Lake Erie railroad; Clyde Brown, New York Central railroad; A. G. Gutheim and H. A. Potter, Pittsburgh, Lisbon & Western.

Organize To Promote Use of Steel Castings

Philadelphia, May 15.—The Steel Castings Development bureau has been organized with headquarters at room 500, Stock Exchange building, this city, to conduct research and development work in steel castings and to acquaint all possible users of this product with its general qualifications and its usefulness for specific purposes. George Batty has been appointed research director. Mr. Batty is a well-known consulting engineer in the steel castings industry. J. V. McCrea has been nominated by the Steel Castings Development bureau to serve as research assistant in steel castings with the United States bureau of mines.

Nine companies comprise the membership. They are the Dodge Steel Co., Philadelphia; Crucible Steel Casting Co., Lansdowne, Pa.; Riverside Steel Casting Co., Newark, N. J.; Atlantic Steel Castings Co., Chester, Pa.; Deemer Steel Casting Co., Newcastle, Del.; Empire Steel Casting Co., Reading, Pa.; Pennsylvania Electric Steel Casting Co., Hamburg, Pa.; Eagan-Johnson Steel & Iron Co., Crum Lynne, Pa., and Treadwell Engineering Co., Easton, Pa.

Announce Lincoln Awards at Spring Meeting of A. S. M. E.

Pittsburgh, May 15.—Award of prizes in the Lincoln arc welding competition constituted a feature at the opening business meeting of the American Society of Mechanical Engineers which is conducting its spring meeting here at the William Penn hotel this week, May 14-17. Several hundred members and guests were registered during the first day's proceedings, consisting of four simultaneous technical sessions, a brief business session and meeting of the council and various committees of the society.

In 1927 the American Society of Mechanical Engineers accepted the custody of $17,500 offered by the Lincoln Electric Co., Cleveland, to be awarded in a competition for the best three papers on the advancement of electric arc welding. Three prizes were to be awarded—$10,000 for first place; $5000 for second; and $2500 for third.

A committee of judges, headed by L. P. Alford, New York, and consisting of ten others representing the American Welding society, American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Society of Civil Engineers and bureau of standards, reviewed the contributions and selected the prize winners.

In all, 77 papers were submitted from the United States and foreign countries, and this number was reduced to 11 on which the final vote was taken. A vote by letter ballot selected the first three papers and this action was later confirmed at a committee meeting. By unanimous decision, first place was given to James W. Owens, supervisor of welding, Newport News Shipbuilding & Dry Dock Co., Newport News, Va., for a contribution, "Arc Welding—Its Fundamentals and Economics."

Second place went to Prof. Henri Dustin, University of Brussels, Brussels, Belgium for a paper "Fundamental Principles of Arc Welding;" and third place to Commander H. E. Rossell, instructor of mathematics at the United States Naval academy, Annapolis, Md., for his paper, "Electric Welding of Ships' Bulkheads and Similar Structures."

Before formal award of the prizes, J. C. Lincoln of the Lincoln Electric Co., outlined briefly the purpose of the competition and thanked the society for sponsoring the awards and assisting in making the public welding minded. Alex Dow, president, Detroit Edison Co., Detroit, and president of the society, presented the prizes. Mr. Owens, paper, consisting of about 300 pages, dealt particularly with welding as applied to shipbuilding, but in addition covered the subject of arc welding from the standpoint of design, shop practice and an analysis of its industrial applications.

Charles F. Bailey, engineering director of the Newport News Shipbuilding & Dry Dock Co., representing Homer I. Ferguson, president of the company, paid a glowing tribute to Mr. Owens for his achievements in the welding industry and in his success with that company. Mr. Owens also is well known as the author of a well-accepted book, "Fundamentals of Welding," published by the Penton Publishing Co., Cleveland, in 1923.

The committee on awards gave honorary mention to a paper, "Theory of the Application of the Base Plate to an Arc-Welded Rail Joint," by Frank B. Walker; and a paper, "Stable Arc Welding on Long-Distance Pipe Lines," by B. K. Smith.

Will Build Open Hearth

An appropriation of $1,350,000 has been made by directors of the Weirton Steel Co. for the immediate construction of a 250-ton open-hearth furnace and adidtions to the soaking pit furnaces, stripper building, slab yard and to the 10 and 16-inch mills. The steelworks at present includes seven 100-ton and four 250-ton basic open-hearth furnaces with an annual output of 1,050,000 tons. Completion of the twelfth unit will increase the company's annual steelmaking capacity to 1,200,000 tons.

The first charcoal blast furnace in Scotland was built in Argyllshire in 1750.

Ship First Foreign Iron to Great Lakes

New York, May 15.—When a cargo of 1500 tons of English hematite iron, equivalent to American low phos iron, is delivered to the Falk Corp., Milwaukee, it will be the first time a consignment of foreign pig iron has been received direct at a Great Lakes port. Cast iron pipe for Detroit and other American cities and rails for Henry Ford's Detroit, Toledo & Ironton railroad have been imported, but no pig iron.

It is understood the iron will cost $26.50 on the dock at Milwaukee, duty paid. At the time the sale was made English hematite was quoted at $18.50. The American duty is $1.12½ per ton. The ocean freight is estimated at $6, plus a selling commission. On European cast pipe to Detroit the freight rate has been about $8. The all-rail rate from Philadelphia to Milwaukee is $8.60.

Norwegian boats, carrying 1400 to 2000 gross tons of cargo are employed in this trade. They are restricted to a 14-foot draft on account of the Welland canal. The extent to which foreign low phos becomes a factor in the Great Lakes district remains to be determined.

Furnace bellows were operated by water wheel for the first time in 1323.

Will Add Six Directors

When directors of the American Iron and Steel institute meet at New York in connection with the spring meeting May 25 they are expected to increase their number from 24 to 30, as authorized at the May 7 meeting of members of the institute.

The membership also has approved elimination of designation of vice presidents numerically, and hereafter they will be listed alphabetically. Willis L. King is now an honorary vice president of the institute; he resigned as a director in March and was succeeded by T. M. Girdler, the new president of the Jones & Laughlin Steel Corp., Pittsburgh.

Testing Society Announces Program

FOURTEEN sessions have been arranged for the thirty-first annual meeting of the American Society for Testing Materials at Chalfonte-Haddon Hall, Atlantic City, N. J., June 25-29, this number of sessions being necessary to cover adequately each field of the society's activities. The schedule of meetings for the week is much the same as in previous years.

Monday will be devoted to registration and committee meetings. The opening session will be on Tuesday afternoon at which time the newly elected officers will be introduced. The names of the nominees are shown in the accompanying box. The presidential address and report of the executive committee will be made at the meeting on Wednesday evening. Meetings are scheduled only for mornings and evenings of Thursday and Friday. On Wednesday afternoon Dr. Frank B. Jewett will present the third Edgar Marburg lecture and the Charles B. Dudley medal will be awarded to A. V. de Forest for a paper, "A Method of Graphic Representation of Magnetic Characteristics," presented at the 1927 annual meeting.

The tentative program of the meeting is as follows:

Tuesday, June 26

AFTERNOON

General

Remarks by President H. F. Moore.
Committee reports.
Announcement of election of officers.

Wrought Iron and Cast Iron

Report of committee A-2 on wrought iron, by H. W. Faus.
Report of committee A-3 on cast iron, by R. S. MacPherran.
Paper: "A Study of Centrifugally Cast Pipe vs. Sand Cast Pipe," by F. N. Menefee and A. E. White.
Report of sectional committee on specifications for cast iron pipe, by T. H. Wiggin.
Paper: "The Static and Fatigue Properties of Some Cast Irons," by J. B. Kommers.
Paper: "Effect of Sulphur on Physical Properties of Gray Iron," by Edwin K. Smith and Fred B. Riggan.

EVENING

Testing, Wear Testing of Metals

Report of committee E-1 on methods of testing, by J. A. Capp.
Paper: "Methods of Particle Size Determination," by Lincoln T. Work.
Paper: "Calibration of Rockwell Hardness Testing Machines," by F. S. Mapes.
Paper: "The Calibration of Extensometers," by R. L. Templin.
Paper: "Measurement of Brittleness," by P. L. Irwin.
Paper: "Wear and Other Properties of Some railroad Bearing Bronzes at Different Temperatures," by H. J. French.
Paper: "Wearing Tests of 12 Per Cent Manganese Steel," by J. H. Hall.
Paper: "Wearing Qualities of Tire Chains," by W. H. Parker.

Wednesday, June 27

MORNING

Steel, Magnetic Testing

Report of committee A-1 on steel, by J. B. Young.
Report of joint committee on investigation of the effect of phosphorus and sulphur in steel, by G. K. Burgess.
Report of research committee on yield point of structural steel, by M. O. Withey.
Paper: "Ferrous Silicates in Steel," by C. H. Herty Jr. and G. R. Fitterer.
Paper: "Tests of Specimens Cut from Different Parts of Structural Steel Shapes," by M. O. Withey.
Report of committee A-4 on heat treatment of iron and steel, by H. M. Boylston.
Report of committee A-9 on ferroalloys by N. B. Hoffman.
Report of committee A-6 on magnetic properties, by Thomas Spooner.
Report of committee A-8 on magnetic analysis, by R. L. Sanford.
Paper: "The Incremental Permeability Method for the Magnetic Analysis of High-Speed Steel," by W. B. Kouwenhoven and Julian D. Tebo.
Paper: "Endurance of High-Speed Cut-Off Tools in Relation to Magnetic and Other Measurements," by Haakon Styri.

AFTERNOON

Third Edgar Marburg lecture: "Some Research Problems Involved in Transoceanic Telephony," by Frank B. Jewett.
Charles B. Dudley medal award to A. V. de Forest.

EVENING

Report of executive committee by C. L. Warwick.
Address of President H. F. Moore: "Hooke's Law of Stress and Strain—An address Commemorative of the 250th Anniversary of Its Announcement."
Informal dance and smoker.

Thursday, June 28

MORNING

Metals: Corrosion, Fatigue and Properties at Elevated Temperatures

Report of committee A-5 on corrosion of iron and steel, by J. H. Gibboney.
Report of sectional committee on zinc coating of iron and steel, by J. A. Capp.
Paper: "Welding of Corrosion-Resistant Chromium Alloys," by W. B. Miller.
Paper: "Some Factors Involved in Corrosion and Corrosion-Fatigue of Metals," by D. J. McAdam Jr.
Paper: "Influence of Inhibitors and Accelerators on Corrosion-Fatigue of Metals," by F. N. Speller, I. B. McCorkle and P. F. Mumma.
Paper: "Long-Time or Flow Tests of Carbon Steels with Particular Reference to Stresses Below the Proportional Limit," by J. J. Kanter and L. W. Spring.
Paper: "Testing of Materials at Elevated Temperatures," by P. G. McVetty.
Paper: "The Seizing of Metals at High Temperatures," by N. L. Mochel.
Report of joint research committee of A.S.M.E. and A.S.T.M. on effect of temperature on the properties of metals, by G. W. Saathoff.

EVENING

Nonferrous Metals and Metallography

Report of committee B-1 on copper wire, by J. A. Capp.
Report of committee B-2 on nonferrous metals and alloys, by William Campbell.
Paper: "Some Mechanical Properties of Nickel, Manganese-Nickel and Copper-Nickel Alloys," by W. A. Mudge and L. W. Luff.
Paper: "Tension Tests of Copper with Varying Dimensions of Test Specimen," by C. H. Marshall.
Report of committee B-4 on metallic materials for electrical heating by Dean Harvey.
Report of committee B-3 on corrosion of nonferrous metals and alloys, by T. S. Fuller.
Report of committee D-14 on wire screen cloth, by R. W. Woodward.
Report of committee E-4 on metallography, by H. C. Boynton.

Officers Nominated

AMERICAN SOCIETY FOR TESTING MATERIALS

President

G. W. THOMPSON
Chief chemist, National Lead Co., Brooklyn, N. Y.

Vice President

K. G. MACKENZIE
Consulting chemist, Texas Co., New York.

Executive Committee

T. R. LAWSON
Head, department of civil engineering, Rensselaer Polytechnic institute, Troy, N. Y.

H. S. MATTIMORE
Engineer of materials, Pennsylvania state highway department, Harrisburg, Pa.

P. D. MERICA
Director of research, International Nickel Co., New York.

SAMUEL TOBIAS WAGNER
Consulting engineer, Reading Co., Philadelphia.

British Steelmakers Investigate Problems of Industry

IN PRESENTING the Bessemer medal at the annual meeting of the British Iron and Steel institute, held in London, May 3, Benjamin Talbot, president, said that it had been instituted to recognize distinguished merit in promoting scientific knowledge, technical ability or the spirit of enterprise in the iron and steel industries. It is unusual, he stated, that these three characteristics should be found in one man, Charles M. Schwab, but in the present circumstances the recipient answered to the full description.

In a moving speech, Mr. Schwab replied that in his long career he always had enjoyed the most pleasant associations with the steelmakers of Great Britain. He said that he valued all the more the honor which was being conferred on him by the British Iron and Steel institute. Civilization, he stated, depends upon the close association and understanding of the two big English-speaking countries, and America is ready to assist Great Britain in the difficult period that she now is experiencing. Mr. Talbot read a cable received from J. A. Farrell, president, United States Steel Corp., New York, expressing appreciation that his colleague thus should have been honored by the British institute.

Honor Guests Speak

At the annual banquet, which was held in the evening of May 3, the guests of honor were Marquess Merry del Val, the Spanish ambassador, and Mr. Schwab. The Spanish ambassador paid tribute to the British steelmaker and stated the Spanish government would endeavor to make the reception of the Iron and Steel institute in Spain, next September, worthy of that great institution. Mr. Schwab, in turn, said that the development of the iron and steel industries was due primarily to British inventors. He referred to advisability of protection and of amalgamating steel companies into a small number of large corporations. He gave every encouragement to those who today engaged in the trade, and assured them of the wholehearted support of their American friends.

President Talbot chose for the subject of his address an account of his 40 years' personal experience in the development of the basic open-hearth process. The speaker made particular mention of the progress and pioneer work achieved by S. T. Wellman in the United States. Mr. Talbot built a tilting furnace for the continuous process, selecting Wellman's method of rolling forward instead of tilting centrally. The latest design of open-hearth furnace of the author has auxiliary hearths mounted on a frame with wheels.

Edgar C. Evans, the National Federation of Iron and Steel Manufacturers, and F. J. Bailey, University of London, presented a paper entitled: "Blast Furnace Data and Their Correlation." This paper describes a method which has been developed of correlating blast furnace data on a common basis, following a study of over 120 blast furnace operating results. The discussion was opened by Mr. Reese, consultant, Weybridge, Surrey, who criticized the fact that the formulas were derived after making an average of the results obtained from the study of a wide diversity of blast furnaces, modern, indifferent, and bad, and this somewhat detracts from the value of these results where modern practice is considered.

D. Sillars, Blockow, Vaughan & Co. Ltd., made similar remarks and added that many more furnaces should be investigated and separated into different groups to arrive at more conclusive results. E. H. Lewis, Glasgow Iron & Steel Co. Ltd., stated that he had tested the equation giving the relations between output and fuel consumption, and that in seven cases out of ten this equation gave him a negative iron factor.

"The Reactivity of Coke" was the title of the next paper by Dr. J. H. Jones, Dr. J. G. King, and F. S. Sinnatt, of H. M. Fuel Research Station, Greenwich. The properties of coke are being investigated from a number of aspects at the fuel research station, Greenwich, and one program of research has led to the evolution of an empirical method for the determination of the "reactivity" of coke toward carbon dioxide, the reactivity of coke being defined as a measure of the velocity of reaction between coke and carbon dioxide. The discussion was opened by Dr. Lessing, who pointed out that this paper should be of great assistance to practical men. He said, however, that the conclusion of the authors did not bring out the fact whether the best coke obtainable should or should not be highly reactive. He emphasized the fact that the ash in the coke is of considerable importance, and suggested that differences in reactivity have something to do with the type and quantity of the ash.

A paper by A. Crooke and T. Thomson described the new plant of the Appleby Iron Co. Ltd., at Scunthorpe.

In the afternoon, J. A. Jones presented a paper on "The Properties of Nickel Steel, with Special Reference to the Influence of Manganese." This paper was followed by a contribution by Dr. Arthur B. Everest and Professor D. Hanson, University of Birmingham, on "The Influence of Nickel on Iron-Carbon-Silicon Alloys Containing Phosphorus." In the conclusions the authors state that phosphorus increases the hardness of the iron, increases its tendency to chill, and renders it difficult to machine. In the absence of chill, nickel produces its normal hardening action. Under conditions likely to produce chilled iron, nickel counteracts the chilling effect of phosphorus.

Presents Ingot Report

One of the most important papers of the meeting was presented at the morning session of Friday, May 4; it was the "Second Report on the Heterogeneity of Steel Ingots," prepared by a committee of the Iron and Steel institute and presented by its chairman, Dr. W. H. Hatfield, the Brown-Firth Research Laboratories, Sheffield. The first report had been presented at the annual meeting in 1927, and dealt with carbon steel ingots of various sizes. The present report gives an account of alloy steel ingots produced from fully killed steel containing nickel, nickel and chromium, and nickel, chromium, and molybdenum. A study of the design of ingot molds also is included. The discussion was opened by Dr. Walter Rosenhain, National Physical Laboratory, Teddington, who emphasized the limited segregation of the metallic components, chromium, nickel, molybdenum, in the photographs and sketches shown by the authors; he also spoke of the influence of the escape of gas on the distribution of the elements, particularly of carbon and sulphur.

J. G. Pearce, director, British Cast Iron Research association, said a

meeting recently had been held in Sheffield between a subcommittee of his association and ingot mold makers and users, and that it is intended to carry out investigations on the influence of the cast iron used for making ingot molds on properties of the ingot.

The next paper, by V. Harbord, Middlesbrough, was entitled: "A Comparison of the Most Important Methods Employed in the Cleaning of Blast Furnace Gas." In the discussion that followed, it was generally stated that it is necessary to clean the gas as far as present methods render it possible, but the methods employed must depend upon the importance of the blast furnace plant, and in cases where there is only one stack it is hardly possible to do more than rough cleaning, which reduces the coal consumption.

The morning session concluded with a paper by Dr. W. H. Hatfield, which consisted of the second part of his investigations on heat-resisting steels, dealing with the mechanical properties. A number of tables showed the results of tensile tests on carbon steels, hardened and tempered high-tensile alloy steels, and heat-treated steels, all at elevated temperatures.

In the afternoon the first paper, by Dr. Thomas Swinden, Sheffield, and P. H. Johnson, Derby, was entitled: "Chromium Steel Rails." In this paper the author questioned the advisability of relying essentially on an increase in carbon content for this purpose. They showed that there is every prospect of a useful future for such material where heavy duty is encountered.

Other papers presented at the meeting were: "A Study of the Resistance of Over-Stressed Wrought Irons and Carbon Steels to Salt-Water Corrosion," by J. Newton Friend; "Blast Furnace Practice in Natal," by J. E. Holgate and R. R. F. Walton; "The Recovery and Sinking-In or Piling-Up of Material in the Brinell Test, and the Effects of These Factors on the Correlation of the Brinell with Certain Other Hardness Tests," by A. L. Norbury and T. Samuel; "Twin-Like Crystals in Annealed Alpha Iron," by Hugh O'Neill; "The Effect of Silicon on Tungsten Magnet Steel," by J. Swan; "The Fatigue-Resisting Properties of 0.17 Per Cent Carbon Steel at Different Temperatures and at Different Mean Tensile Stresses," by H. J. Tapsell; "On the Structure of the Iron-Chromium-Carbon System," by A. Westgren, G. Phragmen, and Tr. Negresco; and "The Rapid Normalizing of Overstrained Steel," by W. E. Woodward.

The bureau of standards, Washington, recently has prepared as Miscellaneous Publication No. 90 a Directory of Commercial Testing and College Research Laboratories. Commercial and college laboratories are listed separately and alphabetically and are keyed to indicate the classes of work handled. Copies of the pamphlet may be secured for 15 cents each by addressing the superintendent of documents, government printing office, Washington.

Foundation Seeks Larger Endowment Fund

The endowment committee of the Engineering Foundation and Engineering Societies library, 29 West Thirty-ninth street, New York, has announced its intention of securing a fund of $5,000,000 to expand its program better to meet the needs of industry. The foundation, organized about 13 years ago as a result of a generous gift from Ambrose Swasey, has used its income to promote research, largely under the direction of the four great engineering societies.

It has demonstrated its ability to make excellent use of the funds which have thus far been entrusted to it, but there are tremendous possibilities in a much larger research program in this country, of a broader or more fundamental nature than that which is now being so well done by individual industries. It was with this in mind the United Engineering society organized a strong endowment committee, which for some time has been quietly planning to secure a more adequate endowment fund. Secretary of Commerce Herbert Hoover recently accepted appointment to the committee, of which Col. Edward A. Simmons is chairman.

Standardized Specifications Are Urged for Refractories

THAT great strides can be made in the betterment of refractories through the adoption of some sort of standardized specifications for certain classes of work, seemed to be the concensus of opinion at the third annual meeting of the American Refractories institute, held May 8 and 9, at White Sulphur Springs, W. Va. It was not possible to adopt anything in the way of specifications at this meeting because so few were in attendance and the matter is to be held open for further discussion at future gatherings.

The most important business session of the convention was devoted to a symposium on specifications in which the following participated: Dr. F. A. Harvey, Harbison-Walker Refractories Co., Pittsburgh; S. M. Kier, Kier Fire Brick Co., Pittsburgh; Foster Holmes, Evans & Howard Fire Brick Co., St. Louis; C. A. Bales, Ironton Fire Brick Co., Ironton, O., and M. C. Booze, Charles Taylor Sons Co., Cincinnati. Morgan B. Smith, General Motors Corp., and W. A. Carter, Detroit-Edison Co., represented the consumers' side of the question taking a lively part in the discussion. S. M. Phelps of the Mellon Institute of Industrial Research, Pittsburgh, recommended certain changes, which now are being perfected.

President J. M. McKinley, who was re-elected for another term recited at length the achievements made in the improvement of refractory materials during the past year and outlined some of the plans and ideas in the minds of those prominent in the industry which are to be worked out during the coming 12 months.

A complete explanation of the different methods used in the "Screening of Fire Clays" was given by W. W. McKee, Link-Belt Co., Philadelphia. Mr. McKee fully described not only his own company's equipment but the machinery of other builders as well.

General Freight Agent William Fitzgerald of the Chesapeake & Ohio railroad whose subject was "Freight Rates on Basic Commodities," gave a great many cost statistics in explaining why at times it is necessary for the railroads to charge what appear to be prohibitively high freight rates.

New Officers

AMERICAN REFRACTORIES INSTITUTE

President

*J. M. McKinley
Vice president and general manager, Crescent Refractorties Co., Curwensville, Pa.

Vice President

R. M. Sievers
Vice president and general sales manager, Evans & Howard Fire Brick Co., St. Louis.

Second Vice President

W. B. Coullie
Assistant general sales manager, Harbison-Walker Refractories Co., Pittsburgh.

Treasurer

*C. C. Edmunds
Treasurer, McLain Fire Brick Co., Pittsburgh.

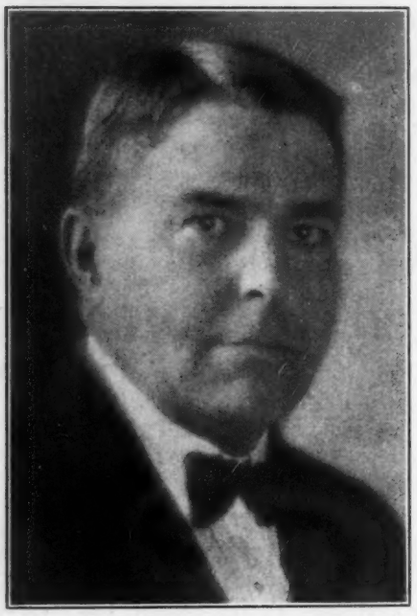
Secretary

*Dorothy A. Texter
2202 Oliver building, Pittsburgh.

*Re-elected.

Industrial Men in the Day's News

Fred T. Llewellyn, Recently Elected President of the American Welding Society



COMING to this country in 1890, he had charge of the construction of the first skeleton steel building in New Orleans four years later.

HIS BUSINESS career began with a job taken at random and he has since devoted his entire life to the broad field of structural steel.

COMBINING the qualities of clear thinker and congenial personality, he brings much prestige to his new position with the American Welding society.

IN 1890 Fred T. Llewellyn arrived in this country without a job and without any prospects, yet, four years later, he had charge of constructing the first skeleton steel structure in New Orleans. Since that time he has been a prominent figure in the structural steel industry of this country. Mr. Llewellyn was honored recently by his election as president of the American Welding society at its convention in New York in April, and announced briefly in IRON TRADE REVIEW at the time.

He was born near Cardiff, Wales, and attended the University of London. Faced with the choice of studying the classics, including Greek, which he disliked, or leaving school, he chose the latter and came to this country as an immigrant. He had a relative living in Minneapolis, and so went there to look for his first job. Within a few days he was fortunate in getting work with the Gillette-Herzog Mfg. Co., in Minneapolis.

This company was later taken over by the American Bridge Co., and under this new ownership Mr. Llewellyn served as contracting engineer until 1907. From 1907 until 1918 he was engineer in the New York office of the Carnegie Steel Co.

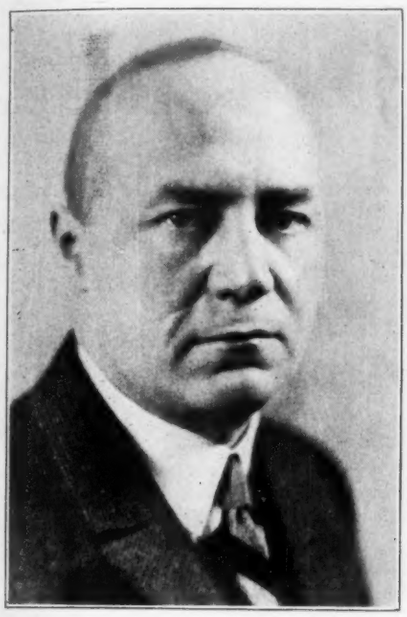
During the war he secured a leave of absence and served with the Emergency Fleet corporation, where he had charge of the distribution of steel for shipyards. After the war James A. Farrell, president of the United States Steel Corp., called him back into commercial service. He is now engineer in the office of the president of the Steel corporation, where he devotes his chief attention to structural steel work. During recent years he has taken an active interest in welding in connection with steel building construction. He has been active in the American Welding society and is a member of many other engineering societies, including the American Society of Civil Engineers, the Brooklyn Engineers' club, the American Society for Testing Materials and the American Society for Steel Treating. He was active chairman of the subcommittee of tests which prepared the recently approved specification for welding tests.

He built the first structural steel building to be erected in Mexico. This was in 1900 in Mexico City. His chief interest outside of business is music and he is a composer of considerable distinction. One of his hobbies is chess, which he plays at the Newark Athletic club, where he makes his home.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

C F. W. RYS, in charge of the metallurgical department of Carnegie Steel Co., Pittsburgh, has been appointed assistant to the president. He has been associated with the Carnegie company since early in 1904 when he was engaged as metallurgist at the Homestead works. In 1908 he became connected with the inspection department in



C. F. W. RYS

Pittsburgh, and in 1910 was made assistant metallurgical engineer. A year later he was placed in charge of the metallurgical department. Mr. Rys was president of the Association of American Steel Manufacturers from 1918 to 1920, and is a member of the American Society for Testing Materials, the American Society for Steel Treating, both the American and British Iron and Steel institute, the Society of Automotive Engineers, American Electric Railway association and the American Railway Engineering association. He is a member also of the metallurgical advisory board of Carnegie Institute of Technology. He is a native of Essen, Germany, and was graduated from the school of mines at Freiberg, in Saxony, in 1902.

* * *

Oscar A. Epp, secretary-treasurer and a director of the Batavia Steel Plate Construction Co. Inc., Batavia, N. Y., has resigned.

* * *

Harry W. Barnard, treasurer of the Rome Wire Co., Rome, N. Y., has been elected a director of the New York Development association at its annual meeting in Watertown May 8.

* * *

H. N. Smith has been appointed district manager in charge of the newly established district sales office of the Linde Air Products Co. at 48 West McLemore avenue, Memphis, Tenn.

* * *

Donald G. Miller has been elected vice president of the American International Corp., New York, succeeding Thomas Bragg, who resigned recently to become associated with W. E. Hutton & Co., New York.

* * *

J. W. Meeker has been appointed purchasing agent of the shipbuilding division of the American Brown Boveri Electric Corp., Camden, N. J., succeeding Leon G. Buckwalter, whose death was announced in IRON TRADE REVIEW, issue of May 3.

* * *

R. Arthur Baldwin, European manager of the International General Electric Co., with headquarters in Paris, and Otto Preussman, vice president of the Tokio Electric Co., located in Japan, have been elected vice presidents of the International General Electric Co.

* * *

Charles S. Garland, district manager, Hickman, Williams & Co., New York, has resigned to become associated with Brown Bros. & Co., New York, investment bankers. Upon his graduation from Yale in 1920 Mr. Garland entered the employ of Hickman, Williams & Co., being located in Pittsburgh until November, 1924, at which time he became manager of the New York office.

* * *

William H. Williams has resigned as senior vice president of the Delaware & Hudson Co., the Hudson Coal Co. and the Chateaugay Ore & Iron Co. to devote his entire time to the Wabash, Missouri Pacific and other roads in which he is interested.

F. W. Leamy has been elected to succeed Mr. Williams as vice president of the Delaware & Hudson Co. and the Hudson Coal Co. and also is expected to be elected vice president and general manager of the Chateaugay Ore & Iron Co.

* * *

Hans J. Meyer has been appointed engineer of the foreign department of the International Combustion Engineering Corp., New York, and will sail for the Far East early next month. Mr. Meyer has been affiliated with the Combustion Engineering corporation since 1926 and was placed in charge of design and construction of complete fuel burning and steam generating equipment for the Kip's Bay station of the New York Steam Corp. He had early training with the Milwaukee Electric Railway & Light Co. and has also been connected with several other interests.

H. W. DUNBAR

Recently appointed works manager of machine division of Norton Co., Worcester, Mass., as noted in last week's issue

* * *

William W. Lewis, who has been identified with the Falcon Steel Co., Niles, O., since about 1920, as superintendent in charge of sheet mill operations, has been appointed general superintendent for the Apollo Steel Co., Apollo, Pa., as noted briefly in last week's issue. This position has

been vacant for two years and now is filled by Mr. Lewis who has had a great deal of experience in sheet mill practice for a long period of years.

* * *

H. De Planche, manager of the ore department of the American Steel Export Co., New York, is spending several weeks in Europe.

* * *

Thomas G. Kus, formerly with the St. Louis Coke & Iron Co., has been appointed vice president of the Arthur L. Stevens Corp., Chicago.

* * *

William J. K. Vanstom of White Weld & Co., New York, investment bankers, has been elected a director of the Wire Wheel Corp. of America.

* * *

A. Levin, formerly with the Minne-

B. E. KIBBEE

New vice president in charge of sales of Sharon Steel Hoop Co., Sharon, Pa., noted in Iron Trade Review recently

apolis Steel & Machinery Co., has become associated with the sales organization of the Moore Drydock Co. of Oakland, Calif.

* * *

Myron C. Summers has become the president and general manager of the Pittsburgh Cold Rolled Steel Co., Pittsburgh, resigning his position with the Empire Steel Corp., Mansfield, O.

* * *

R. P. Dieckelman, secretary of the Pressed Steel Tank Co., Milwaukee, has been elected vice president. Herman Merker has been made secretary, in addition to holding the position of sales manager.

* * *

C. H. Heist, assistant manager of Mayville Iron Co., Mayville, Wis., subsidiary of the Youngstown Sheet & Tube Co., Youngstown, O., has been appointed in charge of the blast furnaces in the eastern district of the Youngstown company. Mr. Heist succeeds H. S. Braman who has retired.

* * *

Charles H. Jackson has been made general sales engineer of the Bayley Blower Co., Milwaukee. He was formerly chief engineer of the company.

Ernest Szekely has been appointed chief engineer of the Bayley company. He is a graduate of the University of Budapest, where he was an associate professor of mechanical and electrical engineering.

* * *

Will McNamee, who for three years has been manager of the scrap iron and steel plant at Imperial, Pa., near Pittsburgh, operated by Briggs & Turivas Inc., Chicago, has been given charge also of its Pittsburgh district sales. Mr. McNamee originally was connected with this company's Chicago organization.

* * *

Charles H. Burr, secretary, treasurer and a director of the S. K. F. Industries Inc., New York, has been appointed a director, secretary and assistant treasurer of the Motor and Accessory Manufacturers association, succeeding A. H. D. Altree, vice president of American Bosch Magneto Corp., Springfield, Mass., who has resigned.

* * *

Henry F. Angelberger of the H. K. Ferguson Co., Cleveland, engineer and builder, will sail May 17 from Vancouver for Japan, to take charge of all the company's construction work there. Mr. Angelberger is one of the company's veteran district building superintendents, having been connected with the firm since its organization ten years ago.

* * *

Percy F. Hord has been elected assistant secretary and treasurer of the National Hardware association at the midyear meeting of the executive committee and advisory board. Mr. Hord received his first hardware experience in Mexico, Mo. He later went with Simmons Hardware Co., St. Louis, and when that company was merged with the Winchester Repeating Arms Co., he became president of the Winchester Simmons Co. of Philadelphia.

* * *

W. S. Unger, formerly with the blast furnace department of the Duquesne works of the Carnegie Steel Co., Pittsburgh, has been appointed superintendent of the Carrie furnace plant of that company succeeding J. E. Lose, whose advancement to the Homestead works was announced in IRON TRADE REVIEW, May 3. Mr. Unger was at one time the assistant superintendent of blast furnaces at Clairton, going from there to be assistant superintendent of the Carrie plant in 1924.

Will Hold Second Fuels Meeting in Cleveland

Plans are being made for the second national fuels meeting to be held in Cleveland, Sept. 17-20, under the auspices of the fuels division of the American Society of Mechanical Engineers. The first was conducted in St. Louis last fall. A comprehensive program is being planned, which will include papers by nationally recognized authorities on the production,

ARTHUR S. BOOTH

Who succeeds B. E. Kibbee as general manager of sales of Sharon Steel Hoop Co., Sharon, Pa., noted recently

distribution and utilization of solid, liquid and gaseous fuels in all fields. In addition to the technical program, arrangements are being made for a number of interesting inspection trips to industrial plants in the Cleveland vicinity.

Iron Rate Unreasonable

Washington, May 15.—The rate on pig iron, in carloads, from Riddlesburg, Pa., to Springfield, Vt., has been found unreasonable by the interstate commerce commission but not otherwise unlawful. Reasonable rates have been prescribed for the future and reparation awarded. The decision is in the case of the Vermont Snath Co. against the Boston & Maine railroad.

European Markets Are Firmer

American Inquiry for 100,000 Tons of Welded Pipe Current in Britain—Scotch Mills Take 10,000 Tons of Rails for Canada, 7500 Tons for Manchuria—French, Belgian and German Prices Show Rising Tendency

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, May 15.—An American inquiry for 100,000 tons of welded steel pipe is reported current in the British market. Scotch mills have obtained orders for 10,000 tons of rails for delivery to Canada and 7500 tons for delivery to Manchuria. Shipyard orders are scarce, but important structural business is pending. Higher prices and longer deliveries have further reduced competition from the Continent. Pig iron exports are expanding slightly; imports from India are heavy. Demand for galvanized sheets is improving, while the boom in the tin plate market continues.

Production of pig iron in Great Britain in April totaled 555,000 tons, against 592,600 tons in March and 545,000 tons in February. One hundred forty-nine stacks were operating at the close of April, one less than on March 31. Steel output in April amounted to 644,100 tons, compared with 793,300 tons in March. Production of steel as reported by British manufacturers in February amouned to 745,000 tons.

April imports of iron and steel products totaled 252,677 tons, against 271,526 tons in March, while exports amounted to 344,333 tons, compared with 409,292 tons in March.

French and Belgian domestic and export markets are more active and prices are rising. Berlin reports higher prices are probable due to advances in coal prices.

British Steel Market Has Some Bright Spots

BIRMINGHAM, Eng., May 4.—The steel mills at some works have struggled to keep in operation, but a larger proportion now report themselves busy, and a hopeful sign is the reopening of the Beardmore works at Mossend, Glasgow, after a rather long period of idleness. Some makers of special steels in Sheffield report they have contracts to occupy them for several months. Some little revival in structural business in the Midlands will benefit steelmakers, but unfortunately tonnages are rather small, generally ranging between 75 and 150 tons and roll changing is enormous.

It seems likely the proposals of the Chancellor to reduce local rating will

Sterling $4.88

go through the house without serious opposition. Toward the end of last year the president of the West of Scotland Iron and Steel institute estimated the proportion of total rates equal to about 10s ($2.44) per ton of steel.

Continental steel tends to increase in price and foreign billets and sheet bars at £5 12s 6d ($27.45) have not much chance of competition, although the Welsh price of bars and billets has this week been increased 2s 6d ($0.61) to £5 17s 6d ($28.57). This is likely to lead to some reversion by Welsh tin plate makers to foreign material, as they consider tin plates at the present price material almost unremunerative. Important increases of Continental material are the rise of 2s 6d ($0.61) in No. 3 Belgian iron, making the selling figure £6 7s 6d ($31.11) delivered in the Black Country; but this is less important than it was a year ago, as many nut and bolt makers changed over their machinery to the use of steel, which gives a more homogeneous and better bolt or nut than the inferior Belgian iron. The rise of Belgian steel bars by 2 6d ($0.61) to £6 10s ($31.72) will check the rather heavy importation by steel merchants, who have shown their resentment of the rebate

Current Iron and Steel Prices of Europe

Export Prices f. o. b. Ship at Port of Dispatch—By Cable

Dollars at Rates of Exchange, May 14	*British* Gross Tons U. K. Ports	£ s d	*French* Metric Tons Channel Ports	£ s d	*Belgium and Luxemburg* Metric Tons Channel Ports	£ s d	*German* Metric Tons Rotterdam or North Sea Port	£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$16.10	3 6 0*	$15.13	3 2 0	$15.13	3 2 0	$15.62	3 4 0
Basic	15.86	3 5 0	14.64	3 0 0	14.64	3 0 0	15.37	3 3 0
Basic-bessemer	16.84	3 9 0†	14.64	3 0 0	14.64	3 0 0	14.64	3 0 0
Hematite, Phosphorus 0.02-0.05	17.08	3 10 0	22.26	565*	.....	.....	17.08	3 10 0
SEMIFINISHED STEEL								
Billets	$28.67	5 17 6	$23.18	4 15 0	$23.18	4 15 0	$22.45	4 12 0
Wire rods	47.58	9 15 0	28.06	5 15 0	28.06	5 15 0	28.06	5 15 0
FINISHED STEEL								
Standard rails	$37.82	7 15 0	$31.11	6 7 6	$31.11	6 7 6	$31.11	6 7 6
Merchant bars	1.53c	7 0 0	1.22c	5 10 6	1.22c	5 10 6	1.17c	5 16 0
Structural shapes	1.61c	7 7 6	1.05c	4 15 0	1.05c	4 15 0	1.06c	4 16 0
Plates, ship, bridge and tank	1.77c	8 2 6	1.39c	6 6 0	1.39c	6 6 0	1.49c	6 15 0
Sheets, black, 24 gage	2.18c	10 0 0	2.34c	10 12 6	2.34c	10 12 6	2.18c	9 18 0
Sheets, galvanized, 24 gage, corrugated	2.83c	13 0 0	2.92c	13 5 0	2.92c	13 5 0	2.92c	13 5 0
Bands and strips	2.23c	10 5 0	1.33c	6 1 0	1.33c	6 1 0	1.18c	5 7 0
Plain wire, base	2.12c	9 15 0	1.54c	7 0 0	1.54c	7 0 0	1.60c	7 5 0
Galvanized wire, base	2.94c	13 10 0	1.98c	9 0 0	1.98c	9 0 0	2.04c	9 5 0
Wire nails, base	2.51c	11 10 0	1.62c	7 7 6	1.62c	7 7 6	1.87c	8 10 0
Tin plate, base box 108 pounds	$ 4.51	0 18 6	.....	.....	.....	.....	$ 6.83	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported

			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.10	3 6 0	$17.53	445(2)	$16.32	585	$18.67	78
Basic pig iron	.....	.....	18.91	480(1)	14.93	535	21.06	88
Furnace coke	2.93	0 12 0	5.91	150	5.16	185	5.15	21.50
Billets	28.06	5 15 0	21.87	555	23.72	850	28.00	117
Standard rails	1.74c	8 0 0	1.48c	820	1.43c	1,100	1.53c	140
Merchant bars	1.61c	7 7 6	1.22c	680	1.22c	935	1.49c	137
Shapes	1.72c	7 17 6	1.17c	650	1.16c	890	1.46c	134
Plates, ship, bridge and tank	1.88c	8 12 6‡	1.51c	840	1.46c	1,125	1.67c	153
Sheets, black, 24 gage	2.29c	10 10 0	2.74c	1,520	2.41c	1,850	2.40c	220
Sheets, galvanized 24 gage, corrugated	2.83c	13 0 0	3.42c	1,900	3.80c	2,925	3.82c	350
Plain wire	2.12c	9 15 0	1.71c	950	1.89c	1,450	2.34c	215
Bands and Strips	2.23c	10 5 0	1.40c	775	1.56c	1,200	1.72c	158

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.17) f. o. b. Ferromanganese £20 10s 0d ($100.04) delivered Atlantic seaboard, duty paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

system by buying foreign steel. It is understood Belgian mills have three months' work on hand and cannot promise delivery before June or July.

Shipbuilding areas are taking better tonnages of steel plates, which probably accounts for the restart of the Beardmore mill referred to above. There is still a good sale of best iron, and increasing quantities of wrought iron are being used for the manufacture of tubes. As the importation of steel plates, bars and billets last week at Middlesbrough was 4855 tons, it is clear that Continental makers have still some hold of the British market.

A slight increase in shipments of pig iron for April has made that month the best since June; but this is not saying much in view of the low figures recorded for several months. Middlesbrough smelters are disappointed, as their prices are now competitive with the Continent, and they looked for some expansion. At present furnaces are just able to dispose of their output. In the west coast district it has been found possible to start two furnaces at Ulverston, where stocks have been cleared and contracts have to be met. But one of the three furnaces working at Millon has been damped down, rather heavy stocks having accumulated. Among the shipments sent away from Barrow was one of 2000 tons for Philadelphia. The demand from the Midlands and Scotland has slightly improved, and Scotland is chiefly responsible for the improved April shipments from Middlesbrough.

Ferromanganese is still only moderately in demand, prices remaining at £13 10s ($65.88) for the home market and £13 5s ($64.66) to £13 10s ($65.88) f.o.b. export. Norwegian makers are keen competitors delivering at the Continental ports for £13 ($63.44) to £13 5s ($64.66).

Output of ships from the Clyde in April was 19 vessels, representing 28,484 tons. This was rather a poor month, but taking the four months the output was 60 vessels of 196,300 tons, more than double that of a year ago.

Heavy steel scrap has become firmer, this material having become rather scarce, and although sales have been small it has been found possible to do business at the increased price of £3 7s 6d ($16.47) delivered South Wales.

Galvanized sheets remain dull and inland business has become practically stagnant. It has been difficult to maintain the selling basis of £13 ($63.44) and makers will be glad to accept 2s 6d ($0.61) less for a good tonnage. The recent reduction in the price of 30-gage sheets has apparently had no influence in the improvement of business. Specifications for black sheets for Japan has been welcome, but the total output in black sheets is rather small.

Coal Advance Helps German Steel

BERLIN, May 2.—Business has revived on the German iron and steel market owing to apprehension on the part of consumers that the pending increase of coal prices will result in higher quotations for iron and steel. It is stated that booking of orders exceeds the rate of the last few months. So far, no decision as to increase in coal prices has been taken, but there is no doubt the government will agree more or less with requests of mine owners. The majority report of the Schmalenbach commission has stated that the coal in the Ruhr district now is produced at a loss of 0.27 marks (6.5 cents) per metric ton, while the socialist member of this commission, Dr. Baade, declares that a profit of 0.58 marks (14 cents) still is made. The position will be further complicated by the recent increase of coalminers' wages by 0.82 marks (19.5 cents) per metric ton, to be paid in accordance with the arbitrators' award. However, when considering these figures attention must be drawn to the fact that they cannot be adapted to the whole industry, but that a number of companies exist in the Ruhr district which produce at a profit. Consequently, mines working at a loss should be closed down.

A further expansion of business is hampered by difficulties of obtaining sufficient credit, but it is hoped the many foreign loans pending will contribute to ease this situation. Railroads especially are ordering only a small part of what they required last year; also building activities so far have not kept pace with expectations. The market for semifinished products has not changed considerably, while sales of structural shapes have improved. The occupation in merchant bar mills is pretty good, and unfilled orders will supply work for about two to three months. A syndicate recently has been formed for the sale of medium-sized sheets, and quotations have been raised to 170 marks ($40.50). It is expected that thin sheet prices also will be advanced. As a result, business in these classes of materials has revived. The dispute existing in the west German iron trade now has been concluded, following decision of the West German Iron Trading Co. that the syndicate agreement shall become effective. Owing to this fact imports of Belgian iron into Germany will be considerably curtailed. Imports of iron and steel products in March once more advanced, as can be seen from the following table, in metric tons.

	Imports	Exports
December, 1927	231,911	352,472
Jan.	265,392	363,026
Feb.	240,324	390,776
March	248,335	334,798

In accordance with lessened consumption for domestic purposes, German steelmasters have been compelled to sell their products abroad, as so far no curtailing of output rolling mills has taken place; on the contrary, it increased to 1,145,070 metric tons in March, compared with 1,089,268 tons in January. The Stahlwerksverband has received an order from the South African railroads for steel sleepers to the value of about 3,500,000 marks ($835,000). Foreign sales of bands and merchant bars have improved, several orders of about 10,000 tons of bars having been sold to Holland at £5 6s ($25.70).

Belgian Steel Prices Are Firmer

BRUSSELS, May 4.—At the meeting of the Brussels iron and steel exchange on April 25, and following a slight depreciation in prices, the tendency of the market became substantially firmer, and this tendency developed at the meeting of May 2; this resulted in a total increase of 3s (75 cents) per ton being registered on merchant bars during these two weeks. The hardening of prices during the last week of April is explained by the large number of inquiries, and also because all the options which had previously entered had been taken up. It also is said that the firmness of the market is partly the result of the satisfactory parliamentary elections in France, and that the French iron and steel industry now is on the verge of entering a period of prosperity, which will enable iron and steel manufacturers of that country to sell their output in the domestic market. It must not be forgotten, however, that France produces more iron and steel than it can absorb, and with the present tendency in that country of restarting blast furnaces, it would not be possible for France to remain long outside the export market.

Franc—2.78c

Semifinished steel is calm. There are few inquiries and producers are mostly out of the market. Prices, however, are firm. Three and 4-inch billets have been done at £4 8s 9d ($21.50) f.o.b. Antwerp. Belgian transformers are paying 800 Belgian francs ($22.25) for 60-millimeter billets at the works. It is stated that British buyers are waiting before passing their orders for sheet bars in the hope that the price will drop to £4 10s ($21.80), but for the time being it is impossible to obtain this material under £4 12s ($22.35) and £4 14s ($22.80), according to size. Blooms are offered at £4 4s ($20.45). Skelp is £5 14s ($27.60). Merchant bars have been very firm and the price of £5 10s ($26.60) is said to have been registered. Important transactions have taken place in angles and round bars. The structural steel department is dull, but quotations are rising following the general tendency. Normal profiles are £4 14s ($22.75), British sizes £14 15s 6d ($23.20).

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

VEEDER-ROOT INC., Hartford, Conn., a recent merger of the Veeder Mfg. Co., Hartford, and the Root Co., Bristol, Conn., the former manufacturing hubodometers, castings and counters, and the latter counters, hinges and metal stampings, has elected John D. Chidsey president. Mr. Chidsey has been president and treasurer of the Root Co. Graham H. Anthony, formerly vice president and secretary of the Allen Mfg. Co., Hartford, has been elected vice president in charge of manufacturing for Veeder-Root Inc. Ralph C. Coxhead, who was president of the Ralph C. Coxhead Corp., New York, has been elected vice president in charge of sales for Veeder-Root Inc.

Directors of the new company in addition to Messrs. Chidsey, Anthony and Coxhead are: Curtis H. Veeder, who was president of the Veeder company; David J. Post, who was treasurer of the Veeder company; Fuller J. Barnes, president of the Wallace Barnes Co., the Associated Spring Corp. and Barnes-Gibson-Raymond Inc. and who was vice president of the Root Co.; Frederick S. Chase, president, Chase Cos. Inc., Waterbury, Conn.; Henry H. Conland, publisher of the Hartford Courant; Charles B. Cook, vice president of the Royal Typewriter Co.; Brooks Leavitt, a member of the Paine-Webber Co., New York investment bankers; V. Russell Leavitt, manager of the Hartford office, Paine-Webber Co.; Charles D. Rice, factory manager of the Underwood-Elliott Fisher Co.; Charles T. Treadway, chairman of the Bristol National bank and the American Trust Co.; Frank E. Wolcott, president, Frank E. Wolcott Mfg. Co.; and Lucius F. Robinson, attorney, Hartford.

* * *

ARTHUR L. STEVENS CORP., Chicago, engineer, has moved offices to 205 West Wacker drive. The company specializes in rolling mills, furnaces and fuel systems.

* * *

REED-PRENTICE CO., Worcester, Mass., machine tool manufacturer, has elected officers as follows: President, C. L. Stevens; F. W. McIntyre, vice president; C. H. Casell, treasurer; Jeremiah Mackin, secretary. F. W. McIntyre and Clinton Schneider, the latter works manager, were elected to the board of directors. Other directors, re-elected, were George C. Lee, Walter Tufts, C. L. Stevens and Arthur Weed.

* * *

ERIE CITY IRON WORKS, Erie, Pa., has established a direct sales office at 1105 Leader building, Cleveland, in charge of Eugene Smith as district manager.

* * *

INDEX MACHINERY CORP. has moved its New York offices from 109 West Sixty-fourth street to 1860 Broadway. The new location gives larger quarters. J. F. Geers has been appointed American manager and J. J. Dillon advertising manager.

* * *

NATIONAL PACKING MACHINERY CO., Jamaica Plain, Mass., has bought the plant of the Silver Lake Co., Newton, Mass., and will put it into immediate operation. The plant consists of six acres with a three-story and basement building.

* * *

SOUTH BEND LATHE WORKS, South Bend., Ind., has appointed the Mills-Lipton Co., 1160 Market street, Chattanooga, Tenn., its representative in that territory. Lathes for general mill work are carried in stock.

* * *

WEIRTON STEEL CO., Weirton, W. Va., has elected the following officers: Secretary, F. A. Hanlin; treasurer, F. M. Hesse; T. J. Hudson assistant secretary and W. L. Horner, assistant treasurer. Mr. Hesse succeeds the late R. J. Hanna. No other changes were made.

* * *

PHILADELPHIA PORCELAIN CO., Woodlynne, N. J., has been reorganized and the plant will be re-equipped, a new furnace and handling equipment being added. The new officers are: President, R. A. Weaver; vice president, H. D. Cushman; treasurer, R. L. Williams; secretary and general manager, R. A. Nelson.

* * *

HIGHWAY TRAILER CO., Edgerton, Wis., is enlarging its production facilities to handle several large orders. The American Telephone & Telegraph Co. has placed an order valued at $600,000. The city of Chicago has bought 85 trailers for use in trains for hauling ashes and garbage. Cincinnati has bought 28 trailers for similar use.

* * *

A. L. SEAMAN & CO., Chicago, manufacturers' agents for metal products, have moved from 549 West Washington street to 222 West Adams street.

* * *

NIGHTINGALE, BAKER & SALISBURY INC., Providence, R. I., has moved to 180 West Exchange street. The company has been engaged for 108 years in handling iron and steel stocks and boiler tubes. It was formed to warehouse these materials in 1820. The new warehouse is 60 x 220 feet, equipped with electric handling machinery.

* * *

SARNIA BRIDGE CO. LTD., Sarnia Ont., recently has obtained exclusive license for the manufacture and sale of the Massillon bar joint for Canada and Newfoundland. Additional capital recently has been added by Montreal concerns, which have taken a substantial interest. The company has been in operation since 1907.

* * *

ROBERT MITCHELL CO., Montreal, Que., manufacturer of bronze and brass fittings, has bought the National Bronze Co. Ltd., Montreal, manufacturer of bearings for railway and street cars. It also has obtained the services for a term of years of Harold J. Roast, founder of the National Bronze Co., as metallurgist and chemist, who will have technical direction of operations.

* * *

SOCIETE PETROMETAL, Paris, France, has established representation at New York for its Knutange and Hagonbange mills, which have been equipped to roll shapes for the American market. Phillipe Cotnareanu represents this branch of the company's activities, with headquarters in the offices of the American Petrometal Corp., 33 West Forty-second street, New York.

* * *

CHAIN PRODUCTS CO., Cleveland, has leased additional space on Lakeside avenue, adjoining its plant at Superior avenue and Fortieth street, and will devote it to the man-

ufacture of tire chains exclusively. The company produces tire, halter, dog, tie-out and porch swing chains, as well as other varieties. Output will be enlarged in all lines as a result of the additional space.

* * *

JAMES T. CASTLE, Pittsburgh, has been given an order by the Union Barge Line Corp. for six turbo generator sets.

* * *

F S. PATTERN CO., Cleveland, will move about July 1 from its present location at 3278 West Thirty-second street, to its new plant at West Twenty-fifth street and Vega avenue.

* * *

LINCOLN RADIATOR CO., Utica, N. Y., will remove its plant Aug. 1 to North Tonawanda, N. Y. A much larger plant will be available there.

* * *

LOTH STOVE CO., Waynesboro, Va., is installing a porcelain enameling department with an electrically operated furnace, designed by the Ferro Enamel Supply Co., Cleveland.

* * *

MOLYBDENUM CORP. OF AMERICA, Pittsburgh, has retained the services of E. J. Lowry, consulting metallurgist, Detroit, for the development of the use of molybdenum in iron and steel.

* * *

MERCHANT & EVANS CO., Chicago, has moved its office and warehouse to 444 West Grand avenue. The company maintains stocks of nonferrous sheets, tin plate, solder, babbitt, type metal, ventilators and fire doors.

* * *

LINDE AIR PRODUCTS CO., New York, has opened a district sales office at 48 West McLemore avenue, Memphis, Tenn., in charge of H. N. Smith, district manager. This office will serve western Tennessee, northern Mississippi and eastern Arkansas.

* * *

McMYLER-INTERSTATE CO., Bedford, O., builder of locomotive cranes and other conveying equipment, will move its New York offices, effective May 28, from the Woolworth building to room 1710, Grand Central Terminal building. G. T. Sinks is in charge.

* * *

AMERICAN SIGNS CORP., Kalamazoo, Mich., has installed a porcelain enameling department designed by the Ferro Enamel Supply Co., Cleveland. The enameling furnace is electrically operated. The department will be in charge of A. E. Thomas. B. C. Wilson is vice president and general manager and T. H. Mars general superintendent.

* * *

MILTON PRAY CO., with offices in San Francisco, Los Angeles and Seattle, has been appointed Pacific coast representative of the McKeesport Tin Plate Co., McKeesport, Pa.; Superior Steel Corp., Pittsburgh; Interstate Iron & Steel Co., Chicago; Neely Nut & Bolt Co., Pittsburgh.

* * *

NATIONAL PATTERN WORKS, Cleveland, has moved its works to 8713 Cedar avenue. In addition to the manufacture of wood patterns the company now is operating a small foundry for the production of white metal patterns for match plates. J. G. Eierman is owner.

* * *

OHIO POWER SHOVEL CO., Lima, O., manufacturer of gasoline shovels, has opened a sales office at 30 Church street, New York, in charge of L. H. Morris; at 1119 South Fifty-sixth street, Philadelphia, in charge of E. E. Fort; at 1250 Straus building, Chicago, in charge of H. P. Steinbrenner.

* * *

GENERAL ELECTRIC CO., Schenectady, N. Y., has re-elected Gerard Swope president, and the remainder of its officers. Henry C. McEldowney, president of the Union Savings bank and the Union Trust Co., Pittsburgh, has been elected a director, the board being increased from 20 to 21. Other directors were re-elected.

Machinery Business Up

Boston, May 15.—Machinery and machine tool business in New England increased in the first quarter of this year by 5 to 30 per cent, compared with the same period last year, according to a recent report of the United Business service of this city.

Obituaries

JOHN MARKY, 62, president and general manager of the National Wrought Iron Annealing Box Co., Washington, Pa., died at his home in that city May 1. He was born in Wolverhampton, England, and came to this country when he was four years old, locating at Indianapolis. In 1893 Mr. Marky established the National Wrought Iron Annealing Box Co. at Anderson, Ind., where it was located until he moved the plant to Washington, 20 years ago.

* * *

John Hinds, 60, president of the Philadelphia Insulated Wire Co., Philadelphia, died in that city recently.

* * *

David Meek, 63, for years connected with the Standard Metal Co., Indianapolis, died recently.

* * *

Robert C. Stevens, consulting engineer in Erie, Pa., since 1906, died at Bayport, Minn., recently. Mr. Stevens, born at Malone, N. Y., September, 1871, was a graduate of the University of Michigan, Ann Arbor, Mich. He became associated with the Atlas Engine Works at Indianapolis in 1900, remaining with that company until 1906 when he moved to Erie, becoming connected with the Skinner Engine Co. In 1918 Mr. Stevens became consulting engineer, retaining his connection with the Skinner company.

* * *

George Alvord Ede, founder of the Cobden Machine Works, Cobden, Ill., died recently.

* * *

C. Lee Cook, president of the C. Lee Cook Mfg. Co. Inc., Louisville, Ky., died April 25.

* * *

Elmer E. Werry, 43, in the sales department at the Cambria works of the Bethlehem Steel Co., died April 28. He had been in the executive offices of the Cambria works for many years.

* * *

Thomas E. Clark, president of the Allegheny River Improvement association, died May 8 in Bellevue, Pa. He was born Sept. 10, 1858, and when 13 years old was sent to Bray's Bend to learn the blacksmith trade to make tools for oil wells. He later learned the pattern trade and then with George Westinghouse, built the first rotary engine and dynamo, invented by Mr. Westinghouse. Later he established the company of steam engine builders in Ferry street, which later was merged with the Pittsburgh Valve Foundry & Construction Co. In 1901 Captain Clark established the Marine Mfg. & Supply Co., of which he was president at the time of his death.

Machinery

May Orders Generally About Equal to April —Agricultural Implement Makers Buying Best in Years—Large Inquiries Lacking

SALES of machine tools and shop equipment are spotty, depending upon the locality. Some dullness was noted in the East during the past week, while in the Central West bookings continue at about the same pace as has been reported in recent weeks.

Large sales are lacking as are inquiries of size. Westinghouse Electric & Mfg. Co. has bought a number of miscellaneous items against its second quarter list. In the Chicago district it is reported that agricultural implement manufacturers again have entered the market and sales to these interests are the best in several years. Ford Motor Co.'s farming out of contracts for parts to outside manufacturing plants has had a stimulating effect upon machinery sales. Crane sales are light.

New York, May 15.—Trading of machine tools is less active than a week ago, with most sellers looking for a falling off for the month. However, the market still is far from dull, with demand comprised almost entirely of orders for single machines. Except for a list of several machines for the Erie railroad, previously noted as a prospective buyer, and the pending list for the New York Central, little railroad inquiry is noted. Demand for overhead and locomotive cranes continues slack, with little in the way of fresh inquiry.

Worcester, Mass., May 15.—Machine tools are moving steadily and include a wide range, but with an absence of large lists. Machine shop business is slightly more active and the call for parts shows improvement. Individual tools include a number of production lathes. Grinding machinery is holding up well and the automobile trade is taking production units. Considerable volume of machined products for airplane construction are being made in this section, while auto part makers continue to do a brisk business. Small tools are fairly active and jobbers' stocks, reported heavy earlier in the spring having been worked lower. A few volume of figured specifications are out with the prospect of some being closed soon.

Pittsburgh, May 15.—Machine tool buying programs are made up of single items. Sales this week, including additional items going to the Westinghouse Electric & Mfg. Co., East Pittsburgh, which still is doling out orders upon its second quarter list, involve machines like a large grinder, an open-side shaper, a hammer, a sheet metal cutter, a die machine, together with a number of smaller scattered pieces of equipment, such as lathes, grinders, etc. Inquiries are similar in their makeup. Miller Saw Trimmer Co. is expected to purchase both new and used machines within a few weeks. While most dealers complain of poor business, one or two report that May so far is proving to be a better selling month than April. Ford Motor Co., Detroit, placed a contract with Heyl & Patterson Inc. for a large domestic coke handling plant with eight coke jouncers.

Cleveland, May 15.—Selling of machine tools continues at a good pace, although individual orders are small in size. It is the number of sales that are keeping the order books filled. At the present rate it appears that business this month will come close to the total for April. Dealers are optimistic as to June, but beyond that will venture no predictions. Numerous awards for parts by the Ford Motor Co. to automotive accessory plants in recent weeks has had a stimulating effect upon the equipment market. Several Cleveland dealers have participated heavily in this class of business. Automobile manufacturers as a whole are buying little and are not expected to enter the market in any extensive way until the designs for 1929 are determined and tooling up commences. Used equipment is in good demand, particularly for spot sales from dealers' floors.

Chicago, May 15.—Both sales of machine tools and inquiry have stiffened and the outlook is much improved over the opening days of this month. It is expected that the volume of buying this month may fully reach that of April. Important railroad activity still is lacking in the West, although the Burlington and Union Pacific are issuing occasional inquiries for scattered items. Chicago, Milwaukee, St. Paul & Pacific has purchased the flue shop equipment that has been on inquiry for some time, and the Santa Fe has bought a few items against its large list that has been outstanding since early in the year. An active demand has been shown during the week for punch presses. Three manufacturers in the Chicago district purchased 11 of these machines. Others are on inquiry. Prompt deliveries can be made as the orders received by the manufacturers have been diversified as to size. Agricultural equipment manufacturers again have entered the machine tool market, and sales to these interests are the best in some years. Prices are reported steady.

CRANE ORDERS PLACED

Among single orders were: 100-ton electric crane for the New York Edison Co., New York, to Niles Crane Corp.; one jib crane for unnamed purchases, to Niles Crane Corp.; ¾-yard crawler crane for Kenvil Sand & Gravel Co., Kenvil, N. J., to Orton Crane & Shovel Co.; one used truck crane for Holbrook Co., Westbrook, Conn., to Hoisting Machinery Corp.; one truck crane for Walker & Wade, New York, to Browning Crane Corp.; truck crane for W. G. Corson & Sons, New York, to Browning Crane Corp.; one crane with extra trolley for Fort Pitt Bridge Works, to Northern Engineering Works; 50-ton crane for Pittsburgh Coal Washer Co., to Morgan Engineering Co.

Two 5-ton transfer cranes, two 1-ton single I-beam handpower cranes, one 5-ton monorail hoist, one 2-ton and two 1-ton electric hoists for Gilbert & Barker, Springfield, Mass., to the Shepard Electric Crane & Hoist Co.

Two 20-ton trolleys and one 2-ton crane for H. J. Heinz Co., Pittsburgh; to Northern Engineering Works.

Two truck cranes for Interstate Palisade Park commission, Bear Mountain, N. Y.; to Browning Crane Corp.

Two 150-ton ingot cranes for Cambria and Lackawanna works of Bethlehem Steel Corp.; to Morgan Engineering Co.

Two 10-ton gantry cranes for A. M. Byers Co., Pittsburgh; to Wellman-Seaver-Morgan Co.

Two crawler cranes for Gaffney Construction Co., New York, to Browning Crane Corp.

CRANE ORDERS PENDING

Four cranes for Carnegie Steel Co., McDonald, O.; bids being compiled.

One crane for Lorain Steel Co., Johnstown, Pa.; bids being compiled.

Six ¾-yard bucket handling over head cranes for Brooklyn Ash Removal Co., Brooklyn, N. Y.; early action is expected.

Two 10-ton cranes for Carnegie Steel Co., Homestead, Pa., one with a bottom dumping bucket for dolomite; bids being taken.

Sheet and Strip Heads To Meet in June

Cleveland, May 15.—Sheet steel executives will hold their sixth annual meeting at White Sulphur Springs, W. Va., June 4, 5, 6 and 7. Executives of the hot-rolled and cold-rolled strip industries will join the sheet steel executives at this meeting, the first since organization of the National Association of Flat Rolled Steel Product Manufacturers.

The meetings will open with a banquet, June 4. Business sessions will follow on the three successive days. The program will embrace discussions by several of the leading executives of the iron and steel industry, and in addition, guest speakers, including Charles J. Graham, president, Bolt, Nut and Rivet Manufacturers' association, will contribute. Social activities will occupy much of the time and executives are urged to bring their families.

Solvay Sales Corp. has moved its offices at Pittsburgh from 331 Fourth avenue to the Clark building.

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

NEW HAVEN, CONN.—Western Electric Co., 80 John street, plans to build a 2-story plant in West Haven.

NEW BRITAIN, CONN.—Fafnir Bearings Co., Booth street, has awarded the contract for a plant addition to include a hardening room, etc. The construction will take place at Orange and Myrtle streets. (Noted April 12.)

STRATFORD, CONN.—Baird Machine Co., manufacturer of machine tools, plans to build a 1-story plant addition, 100 x 150 feet, to be an extension to its machine shop. Fletcher-Thompson Inc., 542 Fairfield avenue, Bridgeport, Conn., is architect and engineer.

BALTIMORE—Davis Iron Works Inc., 301 President street, has been incorporated by Earl Davis.

ARLINGTON, MASS.—R. W. LeBaron Inc. has been incorporated with 250 shares no par value stock to manufacture electric and gas power machinery, equipment, motors, etc., by Edward L. Brown, 8 Strathmore road, Brookline, Mass.

ATTLEBORO, MASS.—G. A. Sweeney, 160 South Main street, has awarded the contract for a 1-story repair and service garage, 100 x 120 feet, on County street.

BOSTON—Charles Street Garage Corp., L. K. Morse, president, plans to build a 3-story repair and service garage, 80 x 100 feet, at 252 Cambridge street.

BOSTON—Arthur F. Bent Co. has been incorporated with 1000 shares no par value stock to manufacture and deal in machinery of all kinds, by Roy H. Booth, 66 Milton road, Rye, N. Y.

GARDNER, MASS.—C. A. Bryant Co. has been incorporated with $100,000 capital to manufacture and install plumbing, heating, etc., by John Flynn, Winchendon, Mass.

GREENFIELD, MASS.—Markwell Stamp Co. has been incorporated with $5000 capital to manufacture machines and machinery for marking and stamping, by William H. Heubisch, 325 Federal street, Greenfield.

SPRINGFIELD, MASS.—Springfield Auto Body & Welding Co. has been incorporated with $25,000 capital to manufacture bodies, chassis equipment, etc., by John Salo, 39 Carver street, Springfield.

WORCESTER, MASS.—Anderson Corp. has been incorporated with 750 shares no par value stock to manufacture machinery and tools by George H. Anderson, 131 Wenonah street, Longmeadow, Mass.

BLOOMFIELD, N. J.—Town commissioners, Essex building, plan to build a 1-story boiler house.

IRVINGTON, N. J.—Best Mfg. Co., 1200 Grove street, manufacturer of electrical products, radio equipment, etc., has awarded the general contract for a 2-story plant addition, 35 x 130 feet, to Kiegel & Spieler, Irvington.

JERSEY CITY, N. J.—H. E. Salzberg & Co. Inc., 54 Brook street, manufacturer of electrical machinery, plans to build a 1-story plant, 50 x 214 feet, at Water and Clark streets.

NORTH BERGEN, N. J.—Marozzi Drying Machine Co. has been incorporated with $150,000 capital by Hopkins & Herr, Hoboken, N. J., attorneys.

BROOKLYN, N. Y.—General Neon Tube Corp. has been incorporated with $20,000 capital to manufacture and deal in electrical signs, by B. R. Witt, 26 Court street, attorney.

NEW YORK—Universal Auto Lamp Mfg. Co. has been incorporated with $12,000 capital by C. L. Raskin, 233 Broadway, attorney.

NEW YORK—Kempton Mfg. Co. has been incorporated with $50,000 capital to manufacture electrical supplies by H. J. Jamieson, 55 Wall street, attorney.

NEW YORK—Subway Sheet Metal Works has been incorporated with $5000 capital by M. Levy, 250 West Fifty-seventh street, attorney.

NEW YORK—Electric Soldering Iron Co. has been incorporated with $100,000 capital by Anderson, Phillips & Moss, 50 East Forty-second street, attorneys.

NEW YORK—Penetro Corp. has been incorporated with $300,000 capital to manufacture and deal in mechanical devices by A. Souval, 128 Broadway, attorney.

NEW YORK—Thomas-Viking Sprinkler Co. has been incorporated with $10,000 capital to manufacture and deal in sprinkler systems, by Dorman & Dana, 17 John street, attorneys.

NEW YORK—Triangle Mechanical Laboratories Corp. has been incorporated with $50,000 capital to manufacture and deal in metal novelties, by L. Sold, 291 Broadway.

NEW YORK—Expert Auto Radiator Works has been incorporated with $5000 capital by S. I. Smithline, 26 Court street, Brooklyn, N. Y., attorney.

NEW YORK—Adler Metal Products Corp. of New York has been incorporated with $20,000 capital by D. A. McBride, East Orange, N. J., attorney.

NEW YORK—Lox-On Devices Corp. has been incorporated with 500 shares no par value stock to manufacture and deal in safety lock pins by F. V. Weisbrod, 5 Broadway, attorney.

NEW YORK—Remote Control Corp. has been incorporated with 3200 shares no par value stock to manufacture engine regulators by Davison & Manic, 128 Broadway, attorneys.

NEW YORK—Magnetic Analysis Corp. has been incorporated with 5000 shares no par value stock to manufacture and deal in machinery by J. W. Thompson, 36 West Forty-fourth street, attorney.

NEW YORK—General Motors Truck Co. is now operating a motor truck rebuilding and repair plant at its location 211-225 West Sixty-first street. Departments for trucks, coaches and cabs, a machine shop unit, overhauling department, etc., will be included.

PORT WASHINGTON, N. Y.—Purty Boat Works, Ned Purty president, Bayview Colony, has awarded the general contract for a 1-story boat building plant to Standard Erecting Corp., 551 Fifth avenue, New York. (Noted May 3).

ROCHESTER, N. Y.—Rochester Chromium Plate Corp. has been incorporated with $10,000 in preferred shares and 200 shares no par value stock, by E. K. VanAllen, Rochester, attorney.

SARATOGA SPRINGS, N. Y.—Dewitt Clinton Pump & Engineering Corp. has been incorporated with $5000 capital by G. Tiernan, 2 Rector street, New York.

TONAWANDA, N. Y.—Remington-Rand Co., manufacturer of office furniture and equipment, has awarded the contract for a warehouse 86 x 320 feet to be built here to the H. K. Ferguson Co., Hanna building, Cleveland.

AMBRIDGE, PA.—Spang-Chalfant Co. has

Resale News

MACHINERY, equipment and real estate of the Vermont Machine Co. Inc., Bellows Falls, Vt., will be sold at auction May 17 and 18. Machinery, including engine, turret and automatic lathes, milling machines, grinders, drill presses, power punch presses, automatics, tin rollers and a long list of other units, will be sold in separate lots. Three manufacturing parcels of real estate will also be sold separately. Samuel T. Freeman & Co., Boston and Philadelphia, are auctioneers.

Sales Calendar

May 17-18—*Auction of machinery, plant and real estate of the Vermont Machine Co. Inc., Bellows Falls, Vt., by Samuel T. Freeman & Co., auctioneers.*

May 18—*Bids opened on waste material including cast iron and brass at Ft. Niagara, N. Y.*

May 23—*Machinery and equipment of Ohio Body & Blower Co., Cleveland, to be sold at auction in piecemeal lots by Industrial Plants Corp.*

acquired 43 acres and contemplates expansion.

BETHLEHEM, PA.—Lehigh university has awarded the contract for structural steel for its Packard laboratory to Bethlehem Fabricators Inc.

LANCASTER, PA.—Safe Padlock & Hardware Co. has been incorporated with $180,000 capital to manufacture and deal in locks, latches, knobs, etc., by S. W. Eby, 242 East Clay street, Lancaster.

MONESSEN, PA.—American Cable Co. plants at Newark and Dunellen, N. J., will be dismantled and relocated on the property of the Page Steel & Wire Co. here.

MONOCACY, PA.—Reading Casting Co. Inc. has been incorporated with $125,000 capital to carry on a general foundry and machine shop business by H. Claude Bell, 941 Fourth street, Reading, Pa.

PHILADELPHIA—Philadelphia Compressor Rental Co. Inc. has been incorporated with $10,000 capital to manufacture, repair and deal in machinery and machinery supplies by Charles Muhler, 2911 Wishart street.

PHILADELPHIA—Melrath Supply & Gasket Co. has been incorporated with $100,000 capital to manufacture and deal in gaskets, packing, washers, etc., by Earle B. Melrath, 470 Gainsboro road, Drexel Hill, Pa.

PHILADELPHIA—Simon Scullin has awarded the contract for rebuilding that part of his iron foundry damaged in a recent fire to Knox Landers Co., 1132 Vine street. (Noted May 10).

PITTSBURGH—Mine Safety Appliance Co. has awarded the contract for concrete reinforcing bars to Carlem Engineering Co. (Noted March 29).

PITTSBURGH—General Electric Co., River road, Schenectady, N. Y., is inquiring for four lathes, head drill, grinder, saw, milling machine and power press for its plant here.

PITTSBURGH—Pittsburgh Research Engineering Co. has been incorporated with $5000 capital to manufacture and deal in valves and similar devices, by Frank R. Frost, 1014 North Highland street, Pittsburgh.

PITTSBURGH—Dicks Aeronautical Corp. has been incorporated with 300 shares no par value stock to manufacture, repair and deal in airplanes, accessories, etc., by George H. Lee, 451 Orchard avenue, Bellevue, Pa.

PITTSBURGH—McKean Co. has been incorporated with $25,000 capital to manufacture and deal in electrical appliances, refrigerating equipment, etc., by Edgar C. McKean, 110 Gordon street, Edgewood, Pa.

PITTSBURGH—Rosell Auto Wheel Co. has been incorporated with $25,000 capital to manufacture iron and steel vehicle wheels and appliances, by Albert V. Rosell, Monterey Place, N. S., Pittsburgh.

PITTSBURGH—Lonsdale Brass Works Inc. has been incorporated with $50,000 capital to manufacture flexible pipe joints, couplings, etc., by John Miller, 575 Oxford street, Pittsburgh.

SCRANTON, PA.—Scranton Auto Body Co. has been incorporated with $5000 capital to manufacture, repair and deal in automobile bodies, accessories, etc., by James K. Peck, 1013 Olive street, Scranton.

PAWTUCKET, R. I.—Blackstone Gas & Electric Co. has awarded the structural steel contract for its power plant to New England Structural Co. (Noted May 10).

PAWTUCKET, R. I.—Collyer Insulated Wire Co., 249 North Main street, has awarded the contract for a 3-story plant addition, 80 x 106 feet, to be built on North Main street. (Noted April 26.)

PROVIDENCE, R. I.—D. M. Watkins Co., Inc., Pine and Foster street, manufacturer of screw machine products, plans to build a 2-story plant addition.

East Central

CHICAGO—Link-Belt Co. has awarded the contract for structural steel for building construction to Mississippi Valley Structural Steel Co.

CHICAGO—North American Car Corp., 327 South LaSalle street, contemplates the purchase of additional equipment for its repair shops.

CHICAGO—A. M. Castle & Co. have awarded the contract for a warehouse to be built at Los Angeles. The warehouse will be equipped for cutting plates, sheets, shapes, etc.

CHICAGO—Daynite Sign Co., 750 East Seventy-ninth street, has been incorporated with $5000 capital to manufacture and deal in electrical and mechanical signs by Edmund H. Burke, Marie E. Canavan and M. E. Cogswell.

CHICAGO—Beacon Light Corp., 150 South La Salle street, has been incorporated with 15 shares no par value stock to manufacture and deal in electric advertising signs, by Paul F. Brown.

CHICAGO—Stiles Aircraft Corp., 5130 Ravenswood avenue, has been incorporated with $7500 capital to manufacture and deal in airplanes and airplane accessories, by John M. Land, John R. Stiles and James D. Peterson.

CHICAGO—Bassick Mfg. Co., 2650 North Crawford avenue, manufacturer of alemite fittings for automobiles, has awarded the contract for a 3-story plant, 81 x 120 feet, to be built at 2660 Crawford avenue.

CHICAGO—Colborne Mfg. Co., 157 West Division street, manufacturer of baking machinery, has purchased property 25 x 120 feet at 1160 North LaSalle street, improved with a 4-story building, to add to its present holdings.

CHICAGO—Albaugh-Dover Mfg. Co., 2100 Marshall boulevard, has been incorporated to manufacture and deal in machinery, farm implements, etc., by P. A. Mortenson, D. B. Woodworth and V. Kale.

CHICAGO—Continental Engineering Co. Ltd., 1347 West Thirty-fifth street, has been incorporated with 250 shares no par value stock to manufacture and deal in ice machines, oil burners and pumps, by Herman F. Nagel, F. L. Harris and J. F. Spoerri.

CHICAGO—Motor Units Corp., 120 South La Salle street, has been incorporated with $200,000 capital to manufacture and deal in parts, units, accessories, etc., for motor vehicles, motors, engines, etc., by John Fletcher, D. P. Davis and R. D. Hubbart.

ROCKFORD, ILL.—Automatic Transmission Co., Douglas and Willoughby streets, has been incorporated to manufacture and deal in automatic transmissions, equipment and accessories, by Winthrop Ingersoll, Roger M. McMullen and W. J. Michel.

ANDERSON, IND.—Delco-Remy Corp. is inquiring for machinery and equipment for the manufacture of electric windshield wipers for its No. 1 building, and for equipment for the manufacture of wiring harness for automobiles for its No. 3 building. (Noted March 22.)

EVANSVILLE, IND.—Hoosier Lamp & Stamping Co., has been incorporated with $150,000 capital to manufacture supplies, dies, patterns, etc., by Thomas J. Morton Sr. and Jr., and Daniel Wertz.

GARRETT, IND.—Alfred Bahr, W. Ball and J. J. Boring, owners of a foundry being established here, have work nearing completion on the foundry building, 40 x 60 feet. Most of the machinery is in place.

ALMA, MICH.—Dual Duty Co. has been organized for the manufacture of an automobile axle unit for Ford and Chevrolet trucks. Frank W. Ruggles, Alma, is president of the new company.

DETROIT—American Brass Co. has awarded the structural steel contract for a plant addition to the Pittsburgh Bridge Co.

DETROIT—Universal Products Co., 6455 Kingsley avenue, is inquiring for machine shop equipment for its new plant addition for the manufacture of small auto parts.

DETROIT—Power Engineering Corp., 7710 Woodward avenue, has been incorporated with $10,000 capital to manufacture and deal in automatic stokers.

FLINT, MICH.—A. C. Spark Plug Co. has awarded the contract for structural steel for plant construction to Flint Structural Steel Co.

ROMEO, MICH.—Jensen Foundry Co. has been incorporated with $50,000 capital to operate a general foundry.

CLEVELAND—Case School of Applied Science has completed plans for its new 4-story chemistry laboratory.

CLEVELAND—Acme Auto Radiator Co., J. J. Bares manager, 7707 Carnegie avenue, has awarded the contract for a 1-story plant 36 x 176 feet, to be built at 7120 Euclid avenue.

ELYRIA, O.—Williams Alloy Products Co., manufacturer of automobile bearings, etc., contemplates plant improvements, including a 15,000-pound capacity furnace. E. M. Williams is president.

NEW BREMEN, O.—Streine Tool & Mfg. Co., manufacturer of sheet metalworking machinery, has work nearing completion for its new plant. A 20-ton crane is to be erected in the building.

PEEBLES, O.—Basic Products Co., manufacturer of refractories, suffered damage to its limestone crushing plant in a fire May 7.

EDGERTON, WIS.—Highway Trailer Co. is purchasing additional machinery to increase its output and take care of increasing orders.

MILWAUKEE—Badger Meter Mfg. Co., 841 Thirtieth street, let the general contract to Robert L. Reisinger & Co. for erecting a foundry and carpenter shop extension, 60 x 120 feet, to cost $40,000 (Noted April 19.)

MILWAUKEE—Milwaukee board of school directors, Frank M. Harbach business man-

ager, will enlarge and re-equip the boiler house of the Twentieth street school. Bids will be opened May 31.

MILWAUKEE—Beat-All Corp. has been organized by members of the Philip Orth Co., 202 Florida street, to manufacture a variable speed cake-mixing machine powered with a 1½ horsepower electric motor.

NECEDAH, WIS.—Wisconsin Power & Light Co., Madison, Wis., plans to build a hydroelectric generating plant on the site formerly occupied by the Necedah Milling Co.

RACINE, WIS.—Modine Mfg. Co., automobile, truck, tractor and industrial radiators, is contemplating the erection of additions. A. B. Modine is president.

West Central

NEWTON, IOWA—Maytag Co., manufacturer of electrically operated washing machines, contemplates plant expansion.

WATERLOO, IOWA—Black Hawk Brass & Aluminum Foundry, Westfield avenue, newly organized by E. E. and C. P. Foster, will engage in brass, aluminum and bronze foundry work.

ST. PAUL—State commission of administration and finance, 1246 University avenue, has awarded the general contract for five maintenance shop buildings, offices, etc., to be at Mankato, Marshall, Owatonna and Windom.

ST. LOUIS—Continental Boiler & Sheet Iron Works, 4389 Duncan street, has increased its capital, contemplating expansion.

ST. LOUIS—Hydraulic Equipment Co. of Missouri has been incorporated by Henry A. Herchert, 5022 Lansdowne street.

ST. LOUIS—International Oil Heating Co., manufacturer of oil burning equipment, contemplates erecting a plant at 3939 Magnolia street.

Southern States

BROOKSVILLE, FLA.—W. R. Risk, city clerk, and associates contemplate establishing a foundry for the manufacture of aluminum lodge emblems for automobiles, etc.

JACKSONVILLE, FLA.—Haugh-Boy Metal Products Inc. has been incorporated by W. B. Haughton, 405 West Sixth street.

GASTONIA, N. C.—Cocker Machine & Foundry Co., iron foundry and machinery manufacturer, has awarded the contract for two plant additions. (Noted April 19.)

WALHALLA, N. C.—Piedmont Motor Co. is building a plant addition.

SPARTANBURG, S. C.—Spartanburg Textile Machinery Co., R. W. Gossett, 240 East Henry street, manager, has acquired the American Machine shops and will manufacture gears, pick cams, pick points, etc.

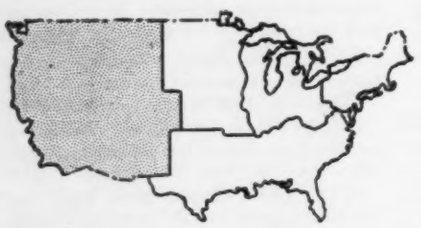
CHATTANOOGA, TENN. — Ross-Meehan Foundries, Carter street, have leased the Gustafson Mfg. Co., Twenty-sixth and Chestnut streets, and will operate the business as unit No. 7. F. E. Spencer is in charge of the unit. No plans have been made as yet for enlarging the manufacturing facilities.

LUFKIN, TEX.—Lufkin Cotton Cleaner Co., manufacturer of cotton gin equipment, has increased its capital possibly contemplating expansion.

PLAINVIEW, TEX.—Texas Utilities Co., J. B. Scott manager, plans to build a power plant at Panhandle, Tex.

RICHMOND, VA.—Starke Foundry & Mfg. Co. has been incorporated with $25,000 capital by Allen J. Saville, Electric building.

WEST NORFOLK, VA.—Spear Engineers Inc., H. B. Spear president, plans to build a shipbuilding plant on an 18-acre tract of land.



Western States

BURBANK, CALIF.—Moreland Truck Co. has started work on its new plant to be 30 x 100 feet and 60 x 74 feet.

LOS ANGELES—Floco Motors Corp., 138 West Seventeenth street, contemplates building a 1-story plant, 100 x 150 feet.

OAKLAND, CALIF.—Board of education plans to build shop buildings for East Oakland high school. Miller and Warnecke, 1401 Franklin street, are architects.

SAN FRANCISCO—International Harvester Co., 201 Potrero avenue, has awarded the contract for a 2-story plant at Fifteenth and Potrero avenues.

PUEBLO, COLO.—Southern Colorado Power Co. is planning enlargements and extensions to its plant.

BUHL, IDAHO—Light and power consumers have approved a plan for a municipal plant.

NORTH BEND, OREG.—Clyde Clefton and associates of Portland announce a proposed coal retort manufacturing plant for this city. The company is capitalized for $1,000,000 and plans to have the plant operating by Aug. 15.

PORTLAND, OREG.—The Hippler-Johnstone Foundry Inc., Lumbermens building, has been incorporated with $2000 capital by W. H. Hippler and D. E. Gilfinan.

PORTLAND, OREG.—S. L. Seeman, fiscal agent for the Shierk Piston Ring Co. has announced plans for the construction of a plant here. Several sites are being considered.

SEATTLE—U. S. Range-Steam Engineering Co. has been incorporated with $500 capital by J. S. Wallace, C. J. Nichols and associates, 911 American Bank Bldg.

TACOMA, WASH.—Western Foundry & Furnace Co. has increased capital stock from $99,000 to $199,000 and changed its name to Western Furnaces Inc. with possible expansion in view.

Canada

DRUMHELLER, ALTA.—Proposed improvements to waterworks plant include the installation of a new 1000-gallon centrifugal pump, etc.

DAUPHIN, MAN.—Bids will be received by J. W. Johnston, secretary and treasurer, until May 19, for equipment for power plant including water tube boilers, turbo alternator, condenser and complete electrical equipment. Consulting engineer, N. M. Hall, Engineer building, Sherbrooke and Portage avenues, Winnipeg, Man.

ELMIRA, ONT.—Link-Belt Ltd., Eastern avenue, Toronto, Ont., has had plans prepared by Ewart, Armer & Byam, Excelsior Life building, Toronto, for an addition to its foundry.

GRIMSBY, ONT.—Grimsby Foundry Ltd. has been incorporated to carry on a general foundry and manufacturing business, with $145,000 capital and 3635 shares no par value stock by Hugh D. Walker, Thomas Worsley, and Edward L. Walker.

HAMILTON, ONT.—Canadian Drive Calk & Tool Co. Ltd. has been incorporated to

A view of the interior of the new warehouse of John Greer & Co. Inc., Baltimore. The building, 122 x 264 feet, is on the main line of the Baltimore & Ohio railroad and has an indoor siding with space for three cars inside the plant.

manufacture and deal in drive calks, horseshoes, tools and machinery with $50,000 capital by William G. Goodwin, Adolph O. Evenson, and George McVittie.

HAMILTON, ONT.—Toronto, Hamilton & Buffalo railroad plans developments here according to general manager, H. T. Malcolmson. A modern engine terminal will replace the present one and a substantial share of the expenditure will go for the purchase of machinery and equipment. A 25-foot stall roundhouse, 110 feet deep with a serving turntable of 100 feet is planned. Buildings to be erected include power house, coaling plant, locomotive repair shop, brick storehouse, etc.

KITCHENER, ONT.—Kitchener Ornamental Iron Co. has purchased a site of 5 acres on Guelph street, and will start work immediately on a foundry. The company will manufacture ornamental iron products, stairways, building equipment, etc., and is expected to be in operation within three months.

TIMMINS, ONT.—Bielli Gravel Loader Ltd. has been incorporated to manufacture and deal in engines, machinery, tools and implements with $250,000 capital by Joe Bielli and Marino Piccin.

TORONTO, ONT.—Standard Brick Co. Ltd., Greenwood avenue, is having plans prepared by E. G. Wilson, 42 Langley avenue, for a boiler room, engine house, and dry kiln.

TORONTO, ONT.—F. M. Scudds Ltd. has been incorporated to carry on the business as iron founder and mechanical engineer, with $40,000 capital by Francis M. Scudds, Francis Edgell, and Harold F. Scudds.

TORONTO, ONT.—Toronto Auburn Ltd. has been incorporated to manufacture and deal in automobiles, tools, and machinery with $40,000 capital by Samuel T. Jinks, Hector A. Stewart, and Edward M. Winder.

TORONTO, ONT.—Newsvending Machines Ltd. has been incorporated to manufacture and deal in automatic slot machines and mechanical newspaper vending devices, with 1000 shares no par value stock by Robert Forsyth, Charles C. Martin, and Gladys L. Jago.

MONTREAL, QUE.—Walter G. Hunt Co. Ltd. has been incorporated to carry on the business as general contractor and engineer, with $100,000 capital by Audrey M. Martin, Hanna G. McKiel and Helen M. Hope.

SHAUNAVON, SASK.—Shaunavon Electric Co. has started work on the construction of a power plant.

New Trade Publications

RENEWABLE FUSES—Trico Fuse Mfg. Co., Milwaukee, has issued a booklet on its powder packed renewable fuses. It is illustrated and shows results of overload tests.

WATER SPRAYS—Semet-Solvay Engineering Corp., New York, in a current bulletin, calls attention to advantages of its water spray in water gas superheaters.

AUTOMATIC CONTROL—Monitor Controller Co., Baltimore, has issued a bulletin covering its devices for automatic control of machine tools as a means for speeding up production. It is illustrated to show application to various tools.

BELT DRESSING—E. F. Houghton & Co., Philadelphia, have issued a booklet on belt dressings. It explains the purpose of dressings for various kinds of belts and how they should be applied.

FILING CASES—Globe-Wernicke Co., Cincinnati, has published a booklet on a system for filing and indexing maps, plans, drawings and similar large sheets. A number of installations and various types of filing units are shown.

NICKEL CAST IRON—A bulletin presenting data on wear and machinability of cast iron has been issued by the International Nickel Co., New York. It is illustrated by microphotographs of various sections of cast iron.

SHIPPING CONTAINERS—Container Corp. of America and Mid-West Box Co., Chicago, have issued a bulletin on a waterproof solid fiber shipping container. Tests of its strength and resistance to water are shown.

STEEL DRILLS—Morse Twist Drill & Machine Co., New Bedford, Mass., announces in a bulletin that it has developed a drill for drilling high manganese steel. Performance of such a drill in railroad manganese steel is given.

GASOLINE LOCOMOTIVES—George D. Whitcomb Co., Rochelle, Ill., manufacturer of haulage machinery, has issued a bulletin on its narrow gage gasoline locomotives of 10 to 30 tons. It is illustrated to shown external and internal feature. Specifications are given.

REINFORCED FLOORS—Irving Iron Works Co., Long Island City, N. Y., has issued a broadside illustrating use of its steel openwork flooring with concrete, composition or mastic to make strong, smooth, armored floor. The special provision for joints is featured.

MOTOR ENCLOSURES—Reliance Electric & Engineering Co., Cleveland, has issued a bulletin on the subject of enclosures for motors for safety and efficency. Suggestions of what not to do in enclosing motors point out dangerous practices.

METAL FIREPROOFING—Milwaukee Corrugating Co., Milwaukee, has issued a catalog of its metal products for use in fireproof building. Various types of material are shown, with instructions for its use and detailed specifications. Tests of strength of floors are also presented. It is a guide to the use of these materials in a wide range of construction.

PRODUCTION LATHE—Jones & Lamson Machine Co., Springfield, Vt., in a current bulletin, gives a production report on sucker rod joints on its two spindle production lathe. This is a semi-automatic machine, a modification of its turret lathe, with an air-operated automatic cross slide substituted for the turret.

RECORDING THERMOMETERS—Brown Instrument Co., Philadelphia, manufacturer of indicating and recording instruments, pyrometers and similar devices, is mailing a bulletin showing application of its recording thermometers and pressure gages in plants where constant temperature and pressure is required. Details of construction of these instruments are also shown.

SLITTER AND COILER—Torrington Mfg. Co., Torrington, Conn., in a current bulletin describes a machine recently designed for special requirements of a customer. It is a combination of a slitting machine with a lawnmower-type scrap cutter, and a three-roll coiler. This machine takes five cuts of copper ⅛-inch thick, up to 42 inches width, with facility for cutting up the scrap edges and coiling the strips, all in one operation.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized. Extra 5 per cent granted in the 4th quarter 1927 and 1st quarter 1928 discontinued April 2, 1928.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 3-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 and 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 5 on black and 1½ and 5 on galvanized.)

Boiler Tubes

Pittsburgh carload discounts. Less carloads 4 points less

STEEL (Lap Weld)

2 and 2¼-inch	27 off
2½ and 2¾-inch	37 off
3-inch	40 off
3¼ to 3¾-inch	42½ off
4 to 13-inch	46 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+18
1¾-inch	+ 8
2 and 2¼-inch	2 off
2½ to 3-inch	7 off
3¼ to 4½-inch	9 off

(Note—Additional discounts of one 10 to two 10's and one 5 now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. specifications, classes A and B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c